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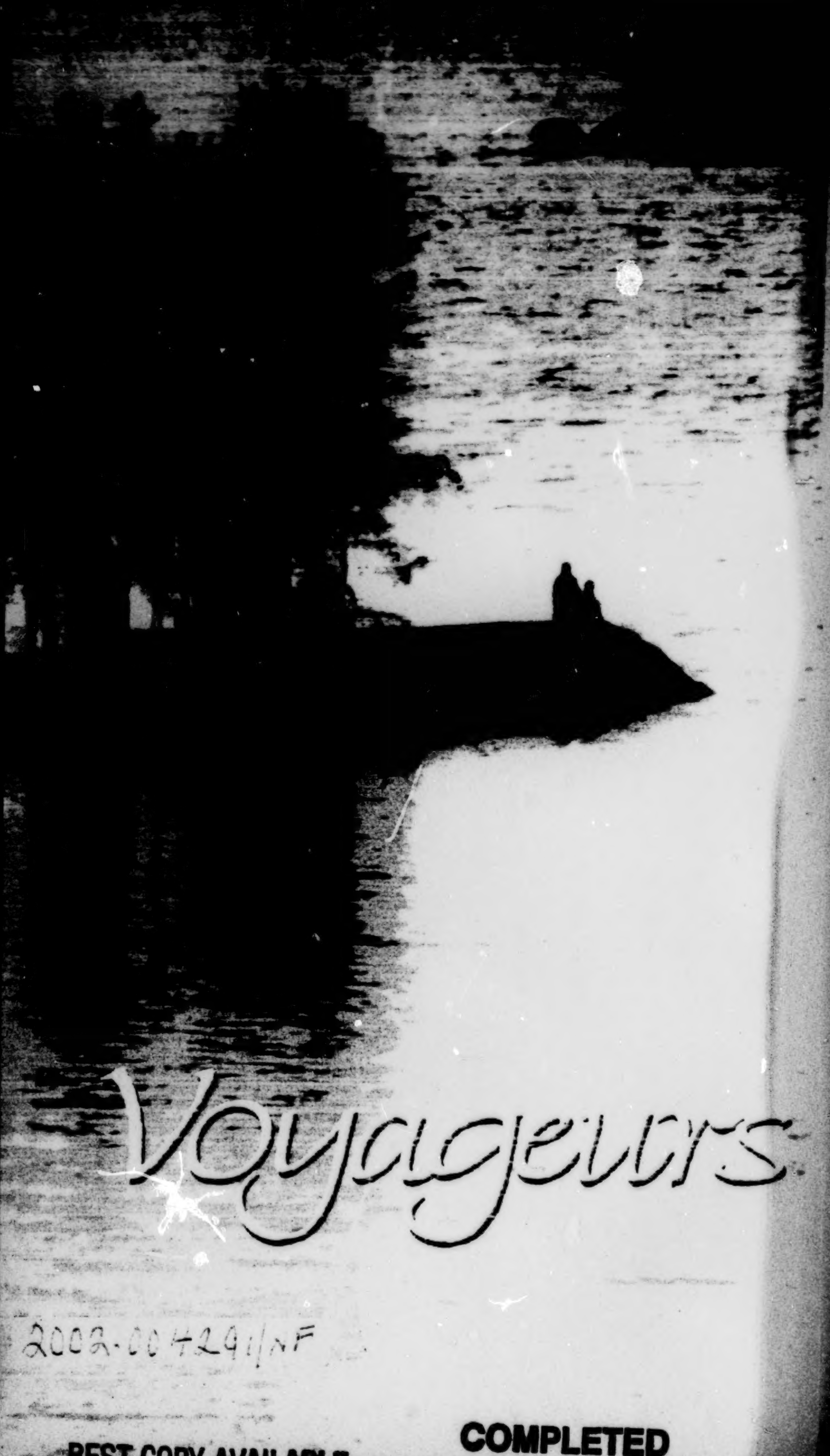

# Voyageurs

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# Final
# General Management Plan / Environmental Impact Statement and Visitor Use and Facilities Plan

## Volume 1

# Voyageurs National Park

### Koochiching and St. Louis Counties, Minnesota

**This *Final General Management Plan / Environmental Impact Statement* describes four alternatives for the management of Voyageurs National Park, as well as the environment that would be affected by the alternatives and the environmental consequences of implementing these alternatives. Also included is the *Visitor Use and Facilities Plan*, which includes park visitor use and facility sections described in the modified proposed action for the general management plan. The *Visitor Use and Facilities Plan* takes a more comprehensive look at the Voyageurs region related to tourism and surrounding visitor uses and facilities. The *Final General Management Plan / Environmental Impact Statement* and the *Visitor Use and Facilities Plan* are both based on the same information, and the environmental impacts of the *Visitor Use and Facilities Plan* would be the same as the modified proposed action.**

**Alternative 1 would continue current management practices and actions at the park, and it constitutes the no-action alternative. This alternative represents continued response to visitor use and resource management issues in accordance with current management direction, including implementation of the approved *1988 Lakecountry and Backcountry Site Management Plan;* there would be no major change in management direction or facility development. The modified proposed action, which combines elements from all of the alternatives, presents a balanced approach for resource protection and visitor use. This alternative would expand and intensify natural and cultural resource protection efforts. The feasibility of collecting fees for overnight permits and facility use would be studied over the next three years, and if feasible, the most appropriate system would be implemented. The number of day and overnight use sites would be increased (but less than alternative 1); cultural and natural resource visitor destinations would be developed throughout the park; and several trails on the Kabetogama Peninsula and islands would be built, plus a mainland trail between the Kabetogama and Ash River communities would be cooperatively developed. A multi-agency visitor center would be jointly developed in Crane Lake, an educational institute for research and educational programs would be established in partnership with others, partnerships would be strengthened with surrounding entities, and park operation facilities would be enlarged at existing developed or disturbed areas. Alternative 2 would focus more intensely on natural and cultural resource preservation, with the fewest new facilities and the most opportunities for visitors to experience solitude, natural quiet, and a natural setting. Alternative 3 would emphasize the visitor experience by offering the widest range and largest number of activities, facilities, and visitor opportunities. Resource protection programs would be more directed to ensuring a quality visitor experience. Many of the ideas presented in alternatives 1 and 2 were combined to create this alternative. Additional ideas in this alternative that are not reflected in the other alternatives include an environmental education center near the Ash River visitor center, two new small campgrounds, a hut-to-hut system for winter use, and commercial fixed-wing aircraft use on Kabetogama Lake.**

**The potential environmental consequences of the actions are addressed for natural resources, cultural resources, visitor experience; interpretation, services, and education; park operations, facilities, and partnerships; and the social and economic environment. No impairment of the park's natural or cultural resources, or the visitor experience, is expected under any of the alternatives.**

**The *Draft General Management Plan / Environmental Impact Statement and Visitor Use and Facilities Plan* was on public review from June 16, 2000, through October 23, 2000. Approximately 2,000 individual letters were received by mail and electronic mail, plus verbal comments made at a series of public meetings held in four communities in Minnesota July 24–27, 2000. All substantive comments are summarized and responded to in volume 2, and comments that were received are reprinted. The text of this final document has been revised where appropriate to modify the proposed action in response to public comments, to clarify information, to correct errors, and to amplify the impact analysis. The release of this *Final General Management Plan / Environmental Impact Statement and Visitor Use and Facilities Plan* will be followed by a 30-day no-action period; if no substantive comments are received during that period, the alternative or actions constituting the approved plan will be documented in a record of decision that will be signed by the Regional Director of the Midwest Regional Office. For further information, contact the GMP/VUFP Coordinator, Voyageurs National Park, Highway 53, International Falls, MN 56649; 218-283-9821.**

UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

# A Guide to Volume 1

## Part I — Final General Management Plan / Environmental Impact Statement

The *Final General Management Plan / Environmental Impact Statement* is organized in accordance with the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act and the National Park Service *Director's Order 2: Park Planning.*

The **Summary**, beginning on the following page, briefly describes the reasons that a general management plan is being prepared, the alternatives being considered, and the environmental consequences of implementing the alternatives.

**Chapter 1: The Purpose of and Need for Action** sets the framework for the entire document. It describes why a plan is being prepared and what needs it must address. It gives the overall direction for the alternatives that are being considered, which are based on the park's legislated mission, its purpose, and the significance of its resources, as well as statements of what the park should be like in the future (these statements of desired future conditions are also referred to as mission goals). It then details the specific problems, issues, and concerns that were raised during public scoping and that are addressed by the alternatives to varying degrees. This chapter also describes how the proposed general management plan relates to other planning documents, both within the park and the region. The chapter concludes with a statement of the scope of the environmental impact statement; specifically what impact topics were or were not considered.

**Chapter 2: Alternatives, Including the Proposed Action**, begins by describing the management areas that will be used to manage the park in the future. It also describes the existing conditions in the park. The four alternatives are then presented, one of which is the modified proposed action (the National Park Service's preferred plan at this time). Alternatives 1, 2, and 3 are similar to alternatives that were presented to the public in the May 1999 *Management Alternatives Response Booklet.* The modified proposed action includes recommendations from each of the alternatives and was revised in response to public comments on the *Draft General Management Plan / Environmental Impact Statement.* This chapter concludes with summary tables of the alternative actions and their environmental consequences.

**Chapter 3: The Affected Environment** describes those areas that would be affected by implementing the alternatives. Natural resources include geology, soils, air quality, water resources, vegetation, fisheries, wildlife, and species of special concern. Cultural resources include archeological resources, ethnographic resources, historic structures, cultural landscapes, and collections. Visitation trends and visitor management are examined for visitor use and facilities. Other elements include interpretation, visitor services, education, the social and economic environment, and park operations.

**Chapter 4: Environmental Consequences** analyzes the impacts of implementing the alternatives on the topics described in "Chapter 3: The Affected Environment." Methodologies for assessing the impacts in terms of the intensity of impact are outlined.

**Chapter 5: Consultation and Coordination** describes the history of the current planning effort and lists agencies and organizations who reviewed the draft document.

The **Maps** section includes the regional context, existing conditions (summer/winter), summer actions for each alternative, and wetlands. There is only one winter map for the alternatives.

The **Appendixes** present supporting information for the document, along with references cited and the planning team and document preparers.

## Part II — Visitor Use and Facilities Plan

The *Visitor Use and Facilities Plan* has been developed in response to the direction in Public Law 97-405. It is based on the same information as the *Final General Management Plan / Environmental Impact Statement,* and it supports the same modified proposed action. Its emphasis is on regional recreation facilities, tourism, and marketing.

# SUMMARY

Voyageurs National Park is a scenic land and water environment of exceptional natural and cultural resources, great character, beauty, and recreational potential. Located in the lakecountry of northern Minnesota, the park protects 218,054 acres that includes roughly 134,000 acres of forested woodlands, 84,000 acres of water, 655 miles of undeveloped shoreline, and over 1,000 islands. The park's 55-mile northern boundary runs along the international border with Canada. The park's complex system of waterways includes one of the most important segments of the "transcontinental highway" traversed by French-Canadian voyageurs during the late 18th and early 19th centuries. Voyageurs National Park was authorized in 1971 and established in 1975 "to preserve, for the inspiration and enjoyment of present and future generations, the outstanding scenery, geological conditions and waterway system which constituted a part of the historic route of the Voyageurs who contributed significantly to the opening of the Northwestern United States."

## PURPOSE OF AND NEED FOR ACTION

The purpose of this *Final General Management Plan / Environmental Impact Statement and Visitor Use and Facilities Plan* is to set forth a basic management philosophy for Voyageurs National Park and to provide a framework for future decision making for the next 15 to 20 years. The park's current *Master Plan*, which was approved in 1980, is no longer adequate to address the policy and operational issues now facing Voyageurs National Park. While the *Master Plan* guided the National Park Service's initial efforts in managing the park, conditions have changed over the last 20 years, and that plan does not provide sufficient direction for protecting natural and cultural resources or providing for visitor use.

This document is unique because it also includes a visitor use and facilities plan, in addition to a proposed general management plan for Voyageurs National Park. In 1983 Congress passed legislation directing the park to complete a visitor use and facilities plan, but the directive was never funded. In 1996–97 a federal mediation process was conducted to address numerous issues about visitor use and management of the park. As a result of this process, the mediation panel recommended that the visitor use and facilities plan could be accomplished through the National Park Service's general management planning process. Therefore, the *Visitor Use and Facilities Plan* has been developed in conjunction with the *Final General Management Plan / Environmental Impact Statement*. The *Visitor Use and Facilities Plan* addresses the same visitor facilities and uses in the park outlined in the modified proposed action, plus it takes a more comprehensive look at the Voyageurs region related to tourism, surrounding visitor use and facilities, and opportunities for working with others outside the park. Since the *Visitor Use and Facilities Plan* proposes the same actions as the modified proposed action, the environmental consequences, including cumulative impacts, would be identical to those that are presented in "Chapter 4: Environmental Consequences."

This document has been prepared to satisfy the requirements of the National Environmental Policy Act of 1969, as amended, which requires a range of alternatives to be studied and the evaluation of potential impacts resulting from federal actions. Four alternatives for resource preservation, visitor experience, interpretation, and park operations are presented; these alternatives have been developed in accordance with the park's mission, purpose, and significance, which are based on the park's enabling legislation. The document also describes the environment that would be affected by the proposed activities and the environmental consequences of implementing any of the alternatives. The modified proposed action is the National Park Service's preferred alternative.

*This Final General Management Plan / Environmental Impact Statement and Visitor Use and Facilities Plan* outlines a basic management framework for future decision making; therefore, site-specific details and recommendations are not always included. Consequently, the environmental impact statement presents a general overview of potential impacts relating to the implementation of actions for each alternative. If the National Park Service determines in the future that specific actions called for by the approved plan require additional study and analysis of impacts, more detailed assessments of impacts will then be prepared as part of implementation planning. These documents will be tiered to this environmental impact statement.

## THE PARK MISSION, PURPOSE, AND SIGNIFICANCE

The mission, purpose, and significance of Voyageurs National Park are based on the park's enabling legislation, and they provide the general direction for each alternative. The mission, purpose, and significance are stated below to provide the reader with adequate background when examining the summary of the alternatives and the environmental consequences.

### Mission Statement

Voyageurs National Park preserves the landscapes and scenic waterways that shaped the route of the North American fur traders and defined the border between the United States and Canada. The park and its diverse resources provide outstanding opportunities for outdoor recreation, scientific study, sportfishing, education, and appreciation of the northwoods lakecountry setting.

### Purpose Statements

The purposes of Voyageurs National Park, according to its legislation, are as follows:

> Preserve the scenery, geologic conditions, and interconnected waterways within the park for the inspiration and enjoyment of people now and in the future.
>
> Commemorate the voyageurs' routes and fur trade with the Native peoples of the north, which contributed significantly to the opening of northwestern North America to European settlement.
>
> Preserve, in an unimpaired condition, the ecological processes, biological and cultural diversity, and history of the northwoods lakecountry border we share with Canada.
>
> Provide opportunities for people to experience, understand, and treasure the lakecountry landscape — its clean air and water, forests, islands, wetlands, and wildlife — in a manner that is compatible with the preservation of park values and resources.

### Significance Statements

Voyageurs National Park is significant for the following reasons:

> The waterways of Voyageurs National Park include one of the most important segments of the fur trade route used in the opening of northwestern North America.
>
> Located near the headwaters of the Arctic watershed of Hudson Bay, the park's lakes — rather than land — have been the primary travel route throughout history. The lakes continue to shape transportation and recreational uses of the area today.

iv

The park's exposed rocks and landscape exemplify the glacial activity of the Pleistocene epoch and some of the most complete and extensive Precambrian geologic features in the United States.

The park preserves the timeless beauty of woods, rocks, water, and sky that invite people to renew themselves through a variety of outdoor activities.

The designation of Voyageurs as a national park is integral to the protection of the boundary waters ecosystem by both the United States and Canada. Along with Quetico Provincial Park and the Boundary Waters Canoe Area Wilderness, Voyageurs was and remains at the heart of a major conservation effort to protect the boreal forest landscape, its interconnected waterways, and associated wildlife.

Voyageurs National Park holds vital evidence of the continuity of 10,000 years of human relationships with the environment uniquely dictated by the interconnected waterway system. The park provides an exceptional, largely unstudied storehouse of knowledge for the future and preserves resources associated with a long period of use, including those representing the fur trade, Native Americans, logging, and recreation.

## OVERVIEW OF ALTERNATIVES

Detailed management prescriptions are presented beginning on page I–37; a summary table of the alternatives is presented at the end of chapter 2, beginning on page I–87.

### Management Areas

The park has been divided into specific management areas. Land management areas include a developed area, a lakecountry area, a backcountry trail area, and a primitive area. Water management areas include an integrated use area, a nonmotorized use area, and a no-wake water area (alternative 2 only). Each management area has a specific set of desired resource conditions and visitor experiences associated with it. The management areas will be applied to the entire area of the park, but the locations and amounts of each management area would depend on the particular emphasis of an alternative. For example, one alternative emphasizes more resource preservation with fewer developed facilities for visitor use, while another emphasizes the development of more visitor facilities.

In all management areas and alternatives, motorized uses include the use of motorboats, electric motors, planes (fixed-wing aircraft), houseboats, and snowmobiles. Nonmotorized uses include canoeing, kayaking, paddleboating, rowboating, sailboating, skiing, snowshoeing, and hiking. In all alternatives, the four major lakes remain open for motorized uses.

### Alternative 1: Present Course of Action (No Action)

Alternative 1 describes the continuation of the existing management direction at the park and constitutes the no-action alternative.

**Natural and Cultural Resource Management.** Under this alternative the National Park Service would continue to manage the park to protect natural and cultural resources in accordance with approved current plans and NPS policies as allowed by staffing and funding. Some, but not all, of the park's historic properties would be preserved.

**Visitor Use and Facilities.** A no-fee permit for all overnight use would be required. Only limited visitor use monitoring would occur.

The four major lakes would continue to have integrated use (motorized and nonmotorized); motorized use would continue on seven interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda). The number of houseboats would remain unlimited.

The special use zone would remain, but snowmobile "radar runs" would continue to be illegal. All other management areas would be the same as now.

Day and overnight sites would continue to be built to meet the development criteria outlined in the approved 1988 *Lakecountry and Backcountry Site Management Plan* (about 400 sites total). The use of undeveloped sites would continue. Summer hiking trails would continue to be built as shown in the *Final Environmental Impact Statement for a Wilderness Recommendation* (1992), with numerous small loops plus linkages to Peninsula destinations. No changes would be made to the existing winter trail system.

Existing visitor facilities would be retained, year-round visitor interpretive services would be offered at the Rainy Lake visitor center, and seasonal services would be provided at the Ash River and Kabetogama Lake visitor centers.

**Interpretation, Visitor Services, and Education.** Visitor contact, resource protection, monitoring, and emergency services would remain limited, with heavy dependence on established partnerships.

**Park Operations, Facilities, and Partnerships.** Park operations would continue in current areas with a limited preventive maintenance program and a strong dependence on volunteers. Existing partnerships would continue; however, only limited partnerships would continue related to fishery and wildlife management and for cultural resource preservation involving educational, institutional, or private entities.

### Modified Proposed Action

**Natural and Cultural Resource Management.** The modified proposed action would expand and intensify natural resource protection efforts through increased inventory and monitoring programs, partnerships, and research. Resource management plans would be revised as needed (such as the *Wildland Fire Management Plan* and the *Lakecountry and Backcountry Site Management Plan)* or completed. The park's fire management policy would support a broader range of resource management objectives, including reestablishing natural fire regimes without unduly reducing visitation or visitor enjoyment.

The park would continue to identify, evaluate for significance, plan for, protect, and share information about cultural resources, including structures, cultural landscapes, archeological resources, ethnographic resources, and collections. Cultural resource management would be more proactive with the development and implementation of treatment plans, a formal monitoring program, and more focused public education efforts. Under the modified proposed action historic properties that represent each cultural resource theme and that focus on the park's mission, purpose, significance, and interpretive themes would be retained.

**Visitor Use and Facilities.** A no-fee, self-registration permit system for overnight summer and winter use would be implemented no sooner that 2002 (use-and-occupancy residents and private landowners would be exempt). Permits would be easily obtained and users would not be directed to specific overnight sites. The purpose of the system would be to gather information about site use and to educate visitors about park conditions, activities, and rules. A feasibility study, which would be conducted with public input, would be completed within three years to determine if a more formal overnight permit system was warranted.

Also, the feasibility of implementing facility use fees for camping and parking would be studied. Entrance fees are not proposed. A monitoring program for visitor experience and resource protection would be established and would be based on information from the no-fee permit system and the overnight permit feasibility study.

Integrated motorized and nonmotorized uses could continue on the four major lakes and the seven designated interior lakes, including fixed-wing aircraft uses (private and one commercial permit). Only nonmotorized use would be allowed on the other interior lakes (the same as alternative 1). No areas for no-wake boating would be established.

A houseboat management plan would be completed by 2005. The plan would address topics such as commercial and private houseboat use, graywater management, users' needs and desires, and the appropriate number of houseboats at one time. Pending the completion of that plan, an interim limit of 60 overnight houseboats per basin would be allowed, for a park total of 120. This interim limit would ensure that the current level of houseboat use in the park would be accommodated at least until 2005, and it would allow for houseboat numbers to grow based on the current peak rate. No limited concession contracts would be established with commercial houseboat companies.

The special use zone near the Kabetogama resort community would be continued, but special events would require a permit and would have to be consistent with the purpose and significance of the park.

The park would continue to provide boats on interior lakes; a fee would be charged beginning in the summer of 2002.

Fewer day and overnight use sites (280–320 total sites) would be built than under alternative 1. The effects of overnight use at undeveloped sites would be studied, and if they were found to be damaging resources or negatively affecting other visitors, these sites would be phased out or other strategies would be implemented. Starting in the summer of 2005, fires would be allowed only in metal fire rings at developed sites.

Visitor destination sites that feature special natural or cultural features that could be interpreted would be developed to enhance visitors' appreciation of the park. Under the modified proposed action 15 to 20 such visitor destination sites would be established.

In cooperation with partners, a mainland, nonmotorized summer and winter trail would be developed between the Kabetogama Lake and Ash River communities, and the feasibility of extending the trail to Crane Lake would be studied. Several hiking trails would be built on the Kabetogama Peninsula, and some would link to visitor destinations. Facility expansion at visitor centers would be minimized; instead alternative methods such as outdoor and temporary facilities would be provided, and visitor information materials and methods would be expanded. A multi-agency visitor center would be developed at Crane Lake. Year-round operations would occur at the Rainy Lake visitor center and the Crane Lake multi-agency center, while operational hours at the Ash River and Kabetogama Lake visitor centers would be based on demand.

**Interpretation, Visitor Services, and Education.** A more comprehensive interpretive program would be provided. Visitor services, resource protection, and emergency response would be expanded and improved with increased staffing. A proposed educational institute to provide special programs and to supplement the park's interpretive program would be formed through partnerships.

**Park Operations, Facilities, and Partnerships.** Park operational facilities would be improved through the development of a Namakan District plan and expanded facilities at Ash River; ranger and interpretive operations would be expanded into the Kabetogama Ranger Station Historic District. The park would actively pursue partnerships with public, institutional, and private entities to help protect resources and provide for quality visitor experiences and facilities.

### Alternative 2: Resource Preservation, Partnerships, Balanced Uses

**Natural and Cultural Resource Management.** Under alternative 2 natural and cultural resource protection would be similar to the modified proposed action. However, natural fire regimes would be reestablished to the greatest extent possible, even if it caused temporary inconveniences to visitors or a temporary reduction in visitor enjoyment. For cultural resources a greater number of historic properties would be preserved, and fewer sites would be designated as visitor destinations.

**Visitor Use and Facilities.** Entry/user fees and an overnight permit system with an educational component would be implemented. A visitor experience and resource monitoring program would be established, the same as the modified proposed action.

A houseboat permit system would be developed, with a total of 50 overnight houseboats allowed per basin (40 commercial and 10 private houseboats), for a park total of 100. No-wake boating areas would be designated in bays on the four major lakes. Commercial fixed-wing aircraft use would be stopped in the park, and private fixed-wing aircraft use and the use of motors would be prohibited on all interior lakes except Mukooda Lake. Boat rentals on Mukooda Lake would be discontinued.

The special use zone would be discontinued.

Fewer day and overnight sites would be built (250–275 total sites), and no overnight use at undeveloped sites would be allowed. Day use at developed sites would be discontinued. Fires would be allowed only in metal fire rings at developed sites. Between 10 and 15 visitor destinations, with interpretive and day use facilities, would be developed.

The proposed Kabetogama–Ash River trail would be developed as described for the modified proposed action, but no additional trails would be added to the existing trail system on the Kabetogama Peninsula. A multi-agency visitor center at Crane Lake and an educational institute would be developed (the same as the modified proposed action). All visitor centers would operate year-round.

**Interpretation, Visitor Services, and Education.** Interpretive programs, visitor contact, resource protection, and emergency response would be expanded, as described for the modified proposed action. Under this alternative, however, concession boat rentals would be eliminated at Mukooda Lake.

**Park Operations, Facilities, and Partnerships.** Park operation facilities and partnerships would be the same as described for the modified proposed action.

### Alternative 3: Emphasis on Visitor Experience and Opportunities

**Natural and Cultural Resource Management.** Alternative 3 would build on and incorporate many of the natural and cultural resource elements from the modified proposed action and most of the visitor use and facility measures identified in alternative 1. This alternative would be the most aggressive in developing visitor facilities, yet it would also enhance resource preservation efforts to ensure a quality visitor experience. Except for minor changes, natural resource preservation would be the same as the modified proposed action. For example, natural fire regimes would be reestablished only when it would not reduce visitor enjoyment or visitor use. Cultural resource actions would be similar to alternative 1, except that visitor facilities and interpretation would be provided at more properties.

**Visitor Use and Facilities.** A study would be completed to determine the feasibility of an entry/user fee system. The system would only be implemented if needed to offset park operations costs. An overnight permit/reservation system with an educational component would be implemented; however, some sites would be retained for first-come, first-served use. Houseboaters would not be required to make reservations, but would need overnight permits.

A houseboat permit system would be implemented, and a total of 70 overnight houseboats per basin would be allowed (60 commercial and 10 private houseboats), for a park total of 140. The number of houseboats allowed under this alternative would be greater than under alternative 2 or the modified proposed action. The four major lakes and all interior lakes would be managed the same as alternative 1, except that expanded commercial fixed-wing aircraft use would be allowed on Kabetogama Lake.

The number of day and overnight sites would be the same as alternative 1 (about 400 total sites); however, the distribution of sites would be different. There would be fewer tent sites, more small campgrounds, more houseboat sites, and more day use destination sites than under alternative 1. There would be more of all types of sites than under the modified proposed action (day use sites excepted) or alternative 2. Day use at developed sites would continue; however, overnight use would be limited to developed sites. From 15 to 20 visitor destinations would be developed (the same as the modified proposed action).

All summer and winter trails outlined in alternative 1 and the modified proposed action would be developed under this alternative. Visitor center expansion would be the same as the modified proposed action, plus an environmental education facility would be considered at the Ash River visitor center. At the Kabetogama Lake visitor center the historic structures would be used for visitor education and interpretation, the same as the modified proposed action; additional space for interpretation and rangers would also be considered. Year-round operations would be provided at all visitor centers (the same as alternative 2), plus the Crane Lake visitor center would be developed.

**Interpretation, Visitor Services, and Education.** Interpretive programs, visitor contact, resource protection, and emergency response would be expanded, as described for the modified proposed action.

**Park Operations, Facilities, and Partnerships.** Facilities for park operations at Ash River would be expanded the most of any alternative. Partnership development would be the same as the modified proposed action.

## ENVIRONMENTAL CONSEQUENCES

The summary of environmental consequences considers the actions being proposed and the cumulative impacts from occurrences inside and outside the park. Impacts are summarized in a table beginning on page I–104.

### Alternative 1: Present Course of Action (No Action)

**Impacts on Natural and Cultural Resource.** Under alternative 1, some adverse impacts to natural resources would continue, with several impacts being moderate or major at a local level but only

IX

minor or negligible when considering the entire park. For example, locally severe soil erosion and the loss of vegetation as a result of visitor use at some developed sites would continue under this alternative. The level of effect at individual sites could be moderate to major; however, when compared to all similar soils and vegetation in the park, the impact would be negligible or minor. While present fire management practices would result in some benefits to the park's native vegetation, the benefit would be negligible compared to conditions before the park was created; fire suppression policies would still be needed for visitor safety and the protection of property. No impairment of soils or vegetation is anticipated under this alternative.

The potential for moderate to major parkwide water quality impacts from polycyclic aromatic hydrocarbon (PAH) contamination released during combustion in motorized watercraft exists. It does not appear that PAH contamination, or releases of oil and gas from motorboats, have impaired water quality, although further testing for the presence and/or impacts from either is needed to know for certain. All alternatives would result in continued releases of these pollutants. Nevertheless, no impairment of the park's water quality resource is expected.

Walleye sportfishing in Rainy, Namakan, and Sand Point Lakes has exceeded target levels for the majority of the last 15–18 years, and in Kabetogama Lake for 6 of the last 15 years. This, combined with managed lake levels and other factors that are largely outside park control, could have major adverse effects on the sportfishery. However, creel surveys indicate sport harvests remain relatively high, perhaps indicating the cumulative impact is not major or that closures, slot limits, changes in water levels, and other measures are mitigating adverse effects. No impairment of the park's fishery resource is anticipated.

The full development of about 400 sites along lake shorelines could have minor to moderate impacts to wildlife. Recreational use could have moderate to major impacts in localized areas, or minor to moderate impacts to shoreline species throughout the lakecountry, because of noise, passive disturbance from the presence of boats or humans, and destruction of habitat by wave action. Despite the potential for more severe localized impacts, no impairment of park wildlife populations is expected.

Bald eagles appear to be experiencing moderate impacts from a combination of sources, including those outside park control, such as weather or toxins. Building proposed developed sites in the lakecountry, combined with the continued use of undeveloped sites, could result in negligible to major impacts on nesting eagles as a result of human disturbance. Access to nests by snowmobiles in the early spring and the presence of stationary or slow-moving boats near nests or in foraging habitat could be significant contributors to adverse impacts on bald eagle productivity inside the park. Removing habitat through development has not and would not have more than a negligible impact on wolves in and adjacent to the park if this alternative was adopted. If a park population of Canada lynx is present, trail development could add to existing impacts from past logging and fire suppression practices, as well as an increased number of roads and trails regionally. However, no impairment to bald eagles, wolves, lynx, or other protected species is anticipated under alternative 1.

For cultural resources, the inventory, evaluation, and treatment of historic buildings, archeological resources, cultural landscapes, and ethnographic resources would continue as funding allowed and would be performed largely in response to maintenance emergencies, project-specific development activities, and visitor complaints. This lack of parkwide inventory data and documentation would continue to make appropriate preservation planning and data interpretation difficult. However, no impairment of park cultural resources is anticipated under this alternative.

**Impacts on the Visitor Experience.** A no-fee overnight use permit would allow the park to develop a more accurate visitor database than exists at present, although the information gathered would be somewhat limited. Nearly doubling the number of day and overnight developed sites (about 186 additional sites), and the continued use of undeveloped sites would accommodate greater numbers of visitors and continue to allow for extensive freedom in site selection. Since most of the sites would be in high-density lakecountry areas and large groups would be allowed at certain camping facilities (up to 72 people), situations would arise where neighboring visitors would be disturbed, reducing the feeling of remoteness, natural quiet, and the overall quality of the experience. These situations would be more likely to occur under this alternative than under the modified proposed action or alternative 2. Motorized use on seven of the interior lakes would continue to negatively impact the qualities of remoteness for those few visitors who primarily access the park by nonmotorized means, but fixed-wing aircraft would provide access for some park guests who might not otherwise be able to get to these areas. Even though additional trails would be developed, most would only be accessible by boat, and many would comprise small loops rather than a destination-oriented trail network. The Ash River and Kabetogama Lake visitor centers and the Crane Lake ranger station would continue to become more crowded, with the worst situation at Crane Lake. No impairment to the visitor experience is anticipated from continuing to implement actions in alternative 1.

Seasonal operations at the Ash River and Kabetogama visitor centers and the Crane Lake ranger station would hinder the ability of visitors to contact park staff and receive educational information about the park during most of the year. Opportunities for education related to resource protection and visitor safety would continue to be limited because of staffing shortages, and conflicts between user groups would continue. The unsafe conditions on the Moose Bay portage and Mukooda Lake trail would continue to make for hazardous travel for snowmobiles, especially during periods of unsafe ice.

**Impacts on Park Operations, Facilities, and Partnerships.** Inadequate work and storage facilities, especially in the Namakan District, would make it difficult for park operations to be efficient. The development of additional facilities, new programs, new publications and media, and additional preservation efforts would result in a modest increase in the workload of field operations that heavily depend on volunteer efforts.

**Impacts on the Social and Economic Environment.** The continuation of the present course of action would have negative economic and social effects on tourist development outside the park. The visitor experience and visitor information services would be adversely affected because staff and materials would not be sufficient to meet the growing and changing demands of visitors to the park or of partners outside the park.

### Modified Proposed Action

**Impacts on Natural and Cultural Resources.** The modified proposed action would have a positive impact on resource preservation and visitor experience in many areas of the park. Localized benefits for soils, vegetation, wildlife, fish, and species of special concern relative to alternative 1 would occur in most areas of the park. This, in combination with limiting party sizes and educating visitors about low-impact camping when requesting permits, would help reduce impacts on vegetation and wildlife habitat. More comprehensive monitoring of developed sites, and restoring undeveloped sites if these sites were closed to use, would be particularly beneficial to soils, vegetation, and wildlife. Natural resource protection and restoration policies, including working with state fisheries managers to emphasize returning fish populations to self-sustaining population levels of native species, could result in parkwide benefits. Revising the park's *Wildland Fire Management Plan* to support restoring fire in forests as a natural ecological process would allow natural fire regimes to be reestablished to the greatest extent possible, without unduly reducing visitation or visitor enjoyment. Although the development of the Kabetogama to Ash River trail would create localized impacts ranging from minor

xi

to major to soils, vegetation, and wildlife, the overall impact to the park would be minor or negligible. Use of this trail could have unknown impacts on Canada lynx in the park, although it is also unknown whether a park population of lynx even exists. No impairment of the park's natural resources is anticipated under the modified proposed action.

The implementation of monitoring studies, permit systems, limited controls on overnight use levels and group sizes, educational programs, and increased attention to adequate maintenance and staffing levels would all significantly reduce the number and scale of cultural resources impacted over time. However, insufficient parkwide inventory data and documentation would continue to provide an inadequate level of information necessary for informed decision-making regarding appropriate preservation planning and data interpretation. No impairment of cultural resources is anticipated.

**Impacts on the Visitor Experience.** A no-fee permit for overnight use would provide an opportunity for visitor contact and education, thus improving the quality of the visitor experience. However, the need to obtain the no-fee permits would be a minor inconvenience. If warranted following a feasibility study, an overnight permit system could help ensure the collection of more comprehensive visitor data to aid park and regional managers in making appropriate decisions about visitor services and facilities.

Interim houseboat permit limits of 60 per basin could impact some houseboat users; however, this limit would ensure that all current houseboat owners and renters could continue to enter the park and would allow for use to grow at the current peak rate. Houseboaters might find it difficult during peak periods to obtain interim permits if houseboat use continued to increase. Motorized use on seven interior lakes would adversely affect a few users, the same as alternative 1.

Developing a total of 280–320 day and overnight use sites (between 80 and 120 less than under alternative 1 or 3), coupled with the potential for continued use of undeveloped sites, would still accommodate an increase in park use. Since the vast majority of the lakecountry area would be developed at a moderate to low density, most visitors would have the opportunity to stay in an area that would feel well separated from other users. Group party size would be reduced from a current maximum of 72 people to 30, and larger groups wanting to camp at a single location would need to find overnight facilities outside the park. The park would work with other entities to help ensure that facilities for larger groups would be available so the impact should be minimal.

Trail system expansion both on the mainland and the Kabetogama Peninsula would afford much greater opportunities for summer and winter access to the backcountry and improve linkages to communities and park destinations. A diversity of trails would provide for access from water and land. Expanded visitor center facilities and operations at the proposed multi-agency Crane Lake visitor center and the Ash River and Kabetogama Lake visitor centers would accommodate a greater volume of visitors, allow for expanded programs, and provide the park with greater opportunities to communicate with many more visitors. Developing an educational institute and more visitor destination sites would provide additional educational and interpretive opportunities. No impairment of the visitor experience is anticipated under the modified proposed action.

Opportunities for education related to boating etiquette and safety would be expanded through programs and partnerships, thereby helping resolve conflicts between user groups. Unsafe snowmobile conditions on the Mukooda Lake trail and Moose Bay portage would be improved for a significant volume of winter season users by rerouting and consolidating these trail/portage/truck route segments.

**Impacts on Park Operations, Facilities, and Partnerships.** The workload increase for park staff would be major, and additional staffing would be needed. Consolidating and expanding maintenance and ranger facilities in the Namakan District and developing additional facilities at Crane Lake and Kettle Falls would result in more efficient park operations. Expanded partnerships with various organizations would afford greater opportunities to use the expertise of resource managers, recreation specialists, and service providers. Increased communications between the park and neighboring land managers would afford greater potential for developing common strategies for resource protection and recreation provision.

**Impacts on the Social and Economic Environment.** Overall, the modified proposed action would have a slight positive effect on the area's economy and relations between the community and the park as a result of proposed activities for cultural resources management, visitor facilities, visitor education, and park operations. Setting an interim limit of 60 houseboats per basin would not have an adverse effect on the economy. This limit would accommodate the peak rate of increase over the next three to four years, pending the completion of a houseboat management plan. The impacts of a possible facility use fee would be evaluated in a feasibility study.

### Alternative 2: Resource Preservation, Partnerships, Balanced Uses

**Impacts on Natural and Cultural Resources.** Alternative 2 would generate the most positive effects on natural and cultural resource preservation. Changing the focus of fire management to support a broader range of resource management objectives could have moderate benefits to native vegetation communities, minor benefits to wetlands compared to existing conditions, and major benefits compared to changes in forests as a result of the use of fire and other practices described in alternative 1. Natural resources would be negatively affected the least of any alternative, although an increase in slow-moving boats in no-wake areas could have adverse impacts on eagles, loons, and other wildlife sensitive to human activity. The impacts to vegetation and wildlife from the Kabetogama–Ash River trail described for the modified proposed action would also apply to alternative 2. No impairment of the park's natural resources is anticipated.

A greater number of historic properties would be preserved, although this would have a negative impact on park operations and budget. Expanded partnerships would be a benefit, similar to the modified proposed action. No impairment of the park's cultural resources is anticipated.

**Impacts on the Visitor Experience.** While this alternative would have the most positive effects on users seeking a quieter experience in the lakecountry, it would have the most negative effects on several other visitor groups. This alternative recommends the least facility development, allows the fewest houseboat permits, allows overnight use only at developed sites, designates no-wake zones, eliminates commercial fixed-wing aircraft use, and discontinues private plane use on all interior lakes except Mukooda Lake. The need to obtain an overnight permit/reservation would inconvenience some users, and permit costs might discourage use by some visitors. This system would provide the park managers with the most comprehensive visitor data, helping guide park and regional management decision making. Providing a total of 250–275 developed sites (including 36–61 new sites), allowing overnight use only at developed sites, eliminating day use at overnight sites, eliminating group campgrounds, and allowing the fewest number of houseboats of any alternative would ensure that most overnight visitors experienced uncrowded conditions. However, visitors would be required to plan well in advance in order to stay overnight in the park during peak periods of visitation. Designating no-wake areas on the four major lakes would provide visitors with more quiet areas than would any other alternative and would especially benefit paddlers. However, no-wake water areas for motorized users would create minor inconveniences, although most designated no-wake areas would require slow travel by default. Eliminating commercial and private fixed-wing aircraft and motors on the interior lakes (except Mukooda Lake) would provide more opportunities for natural quiet and a feeling of remoteness throughout primitive areas of the park. However, the few visitors who use planes for access to these areas would no longer have this service. The visitor experience would not be impaired under this alternative.

The Kabetogama–Ash River trail would provide a significant increase in mainland trail opportunities, helping link the park to area communities, the same as the modified proposed action. However, since no new trails would be provided on the Kabetogama Peninsula, this alternative would provide the fewest hiking options and linkages to visitor destinations. Impacts related to facility development at visitor centers would be the same as the modified proposed action.

**Impacts on Park Operations, Facilities, and Partnerships.** Starting year-round operations at all visitor centers, providing some additional visitor destination areas, developing a multi-agency center at Crane Lake, and establishing an educational institute would afford excellent opportunities for visitor education and interpretation.

**Impacts on the Social and Economic Environment.** Impacts on the social and economic environment, park staffing, operational facilities, safety, and partnerships would be similar to the modified proposed action. However, limiting the number of overnight houseboats, providing the fewest day and overnight sites, and restricting motorized uses on the park's interior lakes could have some adverse effects on the local economy.

### Alternative 3: Emphasis on Visitor Experience and Opportunities

**Impacts on Natural and Cultural Resources.** Alternative 3 proposes the most development of any alternative; however, more controls on visitor use would be implemented than under alternative 1, and many of the natural and cultural resource preservation elements would be the same as the modified proposed action. Impacts to natural resources as a result of overnight use and water-based motorized use would be similar to or less than those described for alternative 1. Using fire to restore red/white pine forests in areas of the park most likely to be visited would possibly have major benefits to this vegetative community, and minor benefits in other plant communities compared to alternative 1. The addition of the Kabetogama–Ash River trail would affect soils, vegetation, and wildlife as described for alternative 1. Some park wildlife in and adjacent to the area of proposed commercial fixed-wing aircraft use on Kabetogama Lake would experience minor to major localized impacts from that use. Some individuals or family groups, including loons, colonial nesting waterbirds, or bald eagles in the immediate vicinity, might experience more intense impacts from fixed-wing aircraft noise. Imposing a 300-600 meter buffer around nesting areas could substantially reduce this impact. No impairment of the park's natural resources is anticipated.

A greater emphasis would be placed on visitor access and alternative solutions to the management, use, and treatment of cultural resources. No impairment of the park's cultural resources is anticipated.

**Impacts on the Visitor Experience.** As described for the modified proposed action, collecting visitor data by means of an overnight permit reservation system would help the park and regional managers make informed decisions about use levels, tourist services, and facilities. The system would assure overnight visitors of being able to locate a site, thus improving the quality of the visitor experience. However, this system would not allow for the same degree of freedom in selecting a campsite that exists now.

Developing a total of about 400 day and overnight sites (about 186 additional sites, the same as alternative 1), more small campgrounds, and more visitor destinations than under alternative 1, along with allowing more houseboat permits, would accommodate the greatest number of visitors and provide a broad spectrum of recreational and educational opportunities. There would be about 27 fewer tent sites than under alternative 1, and the use of undeveloped sites for overnight stays would not be permitted. Therefore, tent users might need to obtain permits in advance, especially during peak seasons of use. The density of day and overnight development would be similar to alternative 1, with most sites in high-density areas. Therefore, as in alternative 1, situations could arise more often than under the modified proposed action or alternative 2 where visitor disturbance would be greater, causing a reduction in seclusion, natural quiet, and the overall quality of experience for some visitors. Expanded commercial fixed-wing aircraft use on Kabetogama Lake would generate an undetermined amount of impact to nearby residents and park users. The amount would depend on the location of the landing areas and the frequency of flights. The impacts of motorized use on seven interior lakes would be the same as alternative 1. No impairment of the visitor experience is anticipated.

Developing all the summer and winter trails proposed in alternative 1 and the modified proposed action would provide the most opportunities and greatest diversity of trails for hikers, cross-country skiers, and snowshoers. In addition, developing a winter hut-to-hut system along the trail system would create recreational opportunities for the few visitors who might desire this type of winter activity. Improved visitor center facilities would accommodate the greatest volume of visitors and provide the widest range of educational programs, since all visitor facility additions described in the modified proposed action would be developed, along with an educational center at Ash River and additional space at Kabetogama Lake. All visitor centers would be open year-round. Overall, educational opportunities would be the greatest of any alternative since the visitor safety and outreach elements of the modified proposed action would also be part of this alternative.

**Impacts on Park Operations, Facilities, and Partnerships.** Under this alternative the greatest increase in staff (slightly more than under the modified proposed action) would be needed. Operational facility development would occur in the same areas as the modified proposed action, plus additional development (more than the modified proposed action) would occur at Ash River. This development would result in more efficient park operations to meet the additional services and facilities proposed in this alternative. Partnerships would improve.

**Impacts on the Social and Economic Environment.** Benefits to the local economy would be similar to the modified proposed action.

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# CONTENTS

Voyageurs National Park ........ I–1

## CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

Introduction ........ I–5
  Purpose ........ I–5
  Need ........ I–6
Direction for the Plan ........ I–7
  Mission, Purpose, and Significance ........ I–7
  Mission Goals ........ I–8
  Laws, Regulations, and Policies and the Planning Process ........ I–11
Problems, Issues, and Concerns ........ I–13
  Visitor Experience, Use, and Facilities ........ I–13
  Interpretation, Visitor Services, and Education ........ I–15
  Natural Resources ........ I–16
  Cultural Resources ........ I–19
  Park Operations, Facilities, and Parterships ........ I–21
  Socioeconomic Concerns ........ I–22
Relationship to Other Plans, Policies, and Projects ........ I–23
  Primary Plans Consulted ........ I–23
  Implementation Plans and Studies to Follow the General Management Plan ........ I–26
Scope of this Document ........ I–28
  Impact Topics Considered ........ I–28
  Impact Topics Dismissed from Further Consideration ........ I–28
  Actions Beyond the Scope of this Planning Effort ........ I–30

## CHAPTER 2: ALTERNATIVES, INCLUDING THE MODIFIED PROPOSED ACTION

Process for Defining an Appropriate Range of Alternatives ........ I–35
Description of Management Areas ........ I–37
  Land Management Areas ........ I–37
  Water Management Areas ........ I–39
Existing Conditions ........ I–41
  Natural Resources ........ I–41
  Cultural Resources ........ I–41
  Visitor Use and Facilities ........ I–42
  Interpretation, Visitor Services, and Education ........ I–44
  Park Operations, Facilities, Partnerships, and Cooperation ........ I–44
Alternative 1: Present Course of Action (No Action) ........ I–45
  Natural Resources ........ I–45
  Cultural Resources ........ I–46
  Visitor Use and Facilities ........ I–48
  Interpretation, Visitor Services, and Education ........ I–51
  Park Operations, Facilities, and Partnerships ........ I–52
  Estimated Costs ........ I–52
Modified Proposed Action ........ I–53
  Natural Resources ........ I–53
  Cultural Resources ........ I–55

Visitor Use and Facilities ........ I–56
Interpretation, Visitor Services, and Education ........ I–63
Park Operations, Facilities, and Partnerships ........ I–64
Estimated Costs ........ I–65
Alternative 2: Resource Protection, Partnerships, Balanced Uses ........ I–66
Natural Resources ........ I–66
Cultural Resources ........ I–67
Visitor Use and Facilities ........ I–69
Interpretation, Visitor Services, and Education ........ I–72
Park Operations, Facilities, and Partnerships ........ I–73
Estimated Costs ........ I–74
Alternative 3: Emphasis on Visitor Experience and Opportunities ........ I–75
Natural Resources ........ I–75
Cultural Resources ........ I–76
Visitor Use and Facilities ........ I–77
Interpretation, Visitor Services, and Education ........ I–81
Park Operations, Facilities, and Partnerships ........ I–82
Estimated Costs ........ I–83
Environmentally Preferred Alternative ........ I–84
Actions Considered but Rejected ........ I–85
Kabetogama Peninsula ........ I–85
Visitor Facilities ........ I–85
Winter Facilities ........ I–86
Other ........ I–86
Summary of Alternatives and Environmental Consequences ........ I–87

## CHAPTER 3: THE AFFECTED ENVIRONMENT

Introduction ........ I–123
Overview ........ I–123
Wilderness ........ I–123
Natural Resources ........ I–124
Geology ........ I–124
Climate ........ I–125
Air Quality ........ I–126
Soils ........ I–128
Vegetation ........ I–129
Water Resources / Water Quality ........ I–134
Fisheries ........ I–140
Wildlife ........ I–144
Cultural Resources ........ I–155
Cultural History Overview ........ I–155
Archeological Resources ........ I–158
Historic Structures ........ I–158
Cultural Landscapes ........ I–159
Collections ........ I–159
Ethnographic Resources ........ I–160
Visitor Use and Facilities ........ I–162
Visitation and Visitor Use ........ I–162
Visitor Management and Developed Facilities ........ I–164
Recreational Uses and Experiences ........ I–168

xviii

Integrated Summer Use ..... I–168
Integrated Winter Use ..... I–175
Interpretation, Visitor Services, and Education ..... I–177
Interpretive Focus ..... I–177
Concessions and Visitor Services ..... I–178
Park Operations, Facilities, and Partnerships ..... I–180
Park Organization and Program Areas ..... I–180
NPS Facilities and Equipment ..... I–180
Park Housing ..... I–181
Partnerships and Cooperation ..... I–181
Regional Social and Economic Environment ..... I–182
Economy ..... I–182
Demographic Characteristics ..... I–182
Economic Effects of the Park ..... I–183
Services and Facilities near the Park ..... I–184
Community Development ..... I–186

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Methodologies for Analyzing Impacts ..... I–191
Natural Resources ..... I–191
Cultural Resources ..... I–195
Visitor Experience, Interpretation, and Services ..... I–196
Social and economic Environment ..... I–197
Summary of Statutes, Regulations, and Policies ..... I–198
General Regulations ..... I–198
Natural Resources ..... I–199
Cultural Resources ..... I–201
Social and Economic Environment ..... I–202
Impacts of Alternative 1 ..... I–204
Natural Resources ..... I–204
Cultural Resources ..... I–231
Impacts on the Visitor Experience — Fire Management ..... I–236
Impacts on the Visitor Experience — Visitor Use and Facilities ..... I–236
Visitor Experience — Noise and Remoteness ..... I–241
Visitor Experience — Safety ..... I–242
Visitor Experience — Concessions ..... I–242
Interpretation, Visitor Services, and Education ..... I–243
Park Operations, Facilities, and Partnerships ..... I–244
Social and Economic Environment ..... I–245
Unavoidable Adverse Impacts ..... I–246
Loss in Long-term Availability or Productivity to Achieve Short-Term Gain ..... I–247
Irreversible or Irretrievable Commitments of Resources ..... I–247
Consistency with NEPA Sections 101 and 102 (1) ..... I–247
Impacts of the Modified Proposed Action ..... I–249
Natural Resources ..... I–249
Cultural Resources ..... I–261
Impacts on the Visitor Experience — Fire Management ..... I–265
Impacts on the Visitor Experience — Visitor Use and Facilities ..... I–265
Impacts on the Visitor Experience — Noise and Remoteness ..... I–270
Impacts on the Visitor Experience — Safety ..... I–271

Impacts on the Visitor Experience — Concessions ..... I–272
Interpretation, Visitor Services, and Education ..... I–272
Park Operations, Facilities, and Partnerships ..... I–273
Social and Economic Environment ..... I–276
Unavoidable Adverse Impacts ..... I–278
Loss in Long-term Availability or Productivity to Achieve Short-Term Gain ..... I–279
Irreversible or Irretrievable Commitments of Resources ..... I–279
Consistency with NEPA Sections 101 and 102 (1) ..... I–279
Impacts of Alternative 2 ..... I–281
Natural Resources ..... I–281
Cultural Resources ..... I–291
Impacts on the Visitor Experience — Fire Management ..... I–294
Impacts on the Visitor Experience — Visitor Use and Facilities ..... I–294
Visitor Experience — Noise and Remoteness ..... I–299
Visitor Experience — Safety ..... I–299
Visitor Experience — Concessions ..... I–300
Interpretation, Visitor Services, and Education ..... I–300
Park Operations, Facilities, and Partnerships ..... I–301
Social and Econonic Environment ..... I–303
Unavoidable Adverse Impacts ..... I–306
Loss in Long-term Availability or Productivity to Achieve Short-Term Gain ..... I–306
Irreversible or Irretrievable Commitments of Resources ..... I–307
Consistency with NEPA Sections 101 and 102 (1) ..... I–307
Impacts of Alternative 3 ..... I–309
Natural Resources ..... I–309
Cultural Resources ..... I–322
Cultural Landscapes ..... I–323
Impacts on the Visitor Experience — Fire Management ..... I–325
Impacts on the Visitor Experience — Visitor Use and Facilities ..... I–325
Visitor Experience — Noise and Remoteness ..... I–330
Visitor Experience — Safety ..... I–331
Interpretation, Visitor Services, and Education ..... I–331
Park Operations, Facilities, and Partnerships ..... I–332
Social and Economic Environment ..... I–334
Unavoidable Adverse Impacts ..... I–337
Loss in Long-Term Availability or Productivity to Achieve Short-Term Gain ..... I–337
Irreversible or Irretrievable Commitments of Resources ..... I–337
Consistency with NEPA Sections 101 and 102 (1) ..... I–337

## Chapter 5: Consultation and Coordination

Scoping Process and Public Participation ..... I–339
Recipients of the Draft General Management Plan / Environmental Impact Statement ..... I–340

## APPENDIXES, GLOSSARY, REFERENCES CITED, PREPARERS, INDEX

Appendix A: Legislation ..... I–367
Appendix B: Voyageurs National Park Draft Interpretive Themes and Compelling Stories ..... I–372
Appendix C: Cultural Resource Themes for Voyageurs ..... I–373
Appendix D: Cost Estimates ..... I–374
Appendix E: Threatened and Endangered Species and Species of Special Concern ..... I–382
Appendix F: Lakecountry and Backcountry Site Management Plan (Excerpts) ..... I–383
Appendix G: Cultural Resource Consultation ..... I–391
Glossary ..... I–392
References Cited ..... I–396
List of Preparers and Planning Team ..... I–419
Index ..... I–422

xxi

# Maps

Regional Context........ I–345
Existing Conditions (summer)........ I–347
Existing Conditions (winter)........ I–349
Present Course of Action / Potential Developed Sites........ I–351
Alternative 1: Present Course of Action (summer)........ I–353
Modified Proposed Action (summer)........ I–355
Alternative 2: Resource Protection, Partnerships, Balanced Uses (summer)........ I–357
Alternative 3: Emphasis on Visitor Experiences and Opportunities (summer)........ I–359
Modified Proposed Action / Alternatives 1, 2, and 3 (winter)........ I–361
Wetlands Inventory........ I–363

# Tables

1: Types and Capacity of Day and Overnight Sites, Existing Conditions........ I–43
2: Types and Capacity of Day and Overnight Sites, Alternative 1........ I–50
3: Types and Capacity of Day and Overnight Sites, Modified Proposed Action........ I–61
4: Types and Capacity of Day and Overnight Sites, Alternative 2........ I–71
5: Types and Capacity of Day of Overnight Sites, Alternative 3........ I–80
6: Summary of Alternatives........ I–87
7: Summary of Environmental Consequences........ I–104
8: Physical Features of Voyageurs National Park's Four Largest Lakes........ I–136
9: Trophic State Indices of Large Voyageurs National Park Lakes........ I–137
10: Activities on Interior Lakes That May Impact Water Quality........ I–138
11: Sample of Birds Occurring in the Park or in the Vicinity........ I–146
12: Annual Visitation, Voyageurs National Park........ I–162
13: Peak Houseboat Numbers........ I–169
14: Houseboat Operations within Voyageurs National Park........ I–169
15: Overnight and Day Use Facilities........ I–172
16: Location of Developed Sites........ I–172
17: Population Change, 1960–2000........ I–182
18: Population Forecasts, 1995–2025........ I–183
19: Income and Poverty Levels, Koochiching and St. Louis Counties........ I–183
20: Economic Impact of Tourism by Region........ I–184
21: Resorts near the Park........ I–185
22: Services Offered by Resorts........ I–186
23: Estimates of Current Upland Vegetation Compared to Presettlement Conditions........ I–210

# Figures

Figure 1: Annual Visitation, Voyageurs National Park........ I–163
Figure 2: Rainy Basin Houseboats — 1986–2000 and Projected Use by 2015........ I–170
Figure 3: Namakan Basin Houseboats — 1986–1999 and Projected Use by 2015........ I–170

# VOYAGEURS NATIONAL PARK

Voyageurs National Park is a scenic land and water environment of exceptional natural and cultural resources, great character, beauty, and recreational potential. Located in the lakecountry of northern Minnesota, the park protects 218,054 acres, including roughly 134,000 acres of forested woodlands, 84,000 acres of water, 655 miles of undeveloped shoreline, and over 1,000 islands. The park's complex system of waterways, featuring the 60th largest body of freshwater in the world, secluded bays, inlets and narrows, includes one of the most important segments of the "transcontinental highway" traversed by French-Canadian voyageurs during the 18th and early 19th centuries. The park's northern boundary shares 55 miles of common border with Canada. The park is approximately 12 miles east of International Falls, Minnesota, and extends eastward for 60 miles along the U.S.-Canadian border.

Voyageurs National Park was authorized in 1971 and established in 1975 "to preserve, for the inspiration and enjoyment of present and future generations, the outstanding scenery, geological conditions and waterway system which constituted a part of the historic route of the Voyageurs who contributed significantly to the opening of the Northwestern United States." The intent of Congress was further defined by authorizing legislation that required an examination of land suitable for designation as wilderness. In 1992, 58.4% of the park's lands and waters (127,436 acres, including 2,442 acres of potential wilderness additions) were recommended for designation as federal wilderness. Although the *1992 Environmental Impact Statement for a Wilderness Recommendation* awaits congressional approval, federal policy requires that proposed wilderness be managed in such a way as to protect its suitability for wilderness designation.

Voyageurs provides a spectrum of recreational opportunities while commemorating the history, culture, and wildlife of this area. Recreational uses are highly motorized — motorized boats and snowmobiles are allowed within much of the park, making Voyageurs accessible to numerous people who would otherwise be unable to reach distant destinations. The most popular recreational activities center on the park's natural environment and include fishing, viewing scenery and wildlife, day hiking, camping, houseboating, paddling, and snowmobiling. Although recreational uses occur throughout the year, the greatest levels of visitation occur during the summer between June and August.

Voyageurs is unique among national parks as an example of the southern boreal forest. The region typifies Canadian Shield topography, a forested land that has been shaped by glaciation into rolling hills and a complex system of lakes and waterways. The bedrock that underlies Voyageurs is some of the most ancient in North America. The park's major landmass is the heavily forested 75,000-acre Kabetogama Peninsula, primarily accessed from the water. The peninsula is about 7.5 miles at its widest point and approximately 26 miles long; it is marked by numerous bogs and interior lakes that can only be reached by foot trails, canoe portages, or fixed-wing aircraft.

Voyageurs is home to a large concentration of river otter, is one of only two national parks in the continental United States with an indigenous population of Eastern timber wolf, and has an estimated 15–25 pairs of nesting bald eagles, 100–150 black bears, and 60–100 moose. Additionally, deer, loon, beaver, and snowshoe hare are commonly seen throughout the park during much of the year. Over 230 species of birds, including colonial nesting waterbirds, cormorants, gulls, white pelicans, and great blue herons, may be viewed during warmer seasons. The lakes in Voyageurs support a fishery resource that is vital to the ecological food chain. Osprey, bald eagles, loons, pelicans, cormorants, otters, black bears, and other birds and mammals rely on fish for a major part of their diet.

The forested lake country along Minnesota's northern border was once the scene of an epic chapter in North American history. For a century and a half, the French-Canadian voyageurs plied the maze of lakes and streams in birch bark canoes and transported vast quantities of furs and goods between Montreal and the far Northwest. Although the park commemorates events of the fur trade, Voyageurs also boasts a rich and colorful history of human occupation dating back 10,000 years. Nearly every major prehistoric and historic theme associated with human interaction and development of the northwestern United States is represented within park boundaries. This includes early hunters and gatherers, Native American cultures, the American homestead era, and immigrants who came to log, fish, and mine commercially, and to hunt and trap. Within the park there are three historic districts (Kettle Falls, Gold Mine, Kabetogama Ranger Station), one historic property, and five archeological sites on the National Register of Historic Places. There are an additional 19 properties that have been determined eligible for the national register in consultation with the Minnesota State Historic Preservation Office. Others may be identified as inventory and evaluation continues.

## Chapter One

# Purpose of and Need for Action

## 1

Introduction
Direction for the Plan
Problems, Issues, and Concerns
Relationship to Other Plans, Policies, and Projects
Scope of this Document

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# INTRODUCTION

This document is a *Final General Management Plan / Environmental Impact Statement* for Voyageurs National Park. Four alternatives for a general management plan are analyzed, including the no-action alternative and the National Park Service's preferred alternative or the proposed action.

The proposed action in this document is a modification of the proposed action presented in the *Draft General Management Plan / Environmental Impact Statement*. The modifications were made following NPS review of public comments and existing impact and visitor use information; the changes would not result in any impacts different from those that were analyzed in the draft document. The modified proposed action is the National Park Service's preferred alternative, and barring any new information or other circumstances unknown at this time, it will be selected as the preferred alternative to implement as the approved general management plan. The selection of the modified proposed action as the approved general management plan will be documented in a record of decision that will note any information or circumstances affecting approval of the general management plan. The modified proposed action is synonymous with that described in the attached "Visitor Use and Facilities Plan."

Volume 2 of this *Final General Management Plan / Environmental Impact Statement* includes responses to substantive comments (that is, comments questioning or debating the facts in the document) on the draft document that were made by agencies, organizations, and the general public. Comment letters (or representative samples of letters in cases where several people sent the same letter) are also reprinted in volume 2.

The alternatives presented in this document are based on statements of the park's mission, purpose, and significance, and they present different ways (1) to achieve desired future conditions or mission goals for the park, and (2) to resolve problems, issues, and concerns. The document describes existing conditions.

## PURPOSE

The park's current *Master Plan*, which was approved in 1980, is no longer adequate to address the policy and operational issues now facing Voyageurs National Park. While the *Master Plan* guided the National Park Service's initial efforts in managing the park, conditions have changed over the last 20 years, and that plan does not provide sufficient direction for protecting natural and cultural resources or for managing visitor use.

The purposes of a new general management plan are as follows:

- Identify an overall direction for park management over the next 15 to 20 years by clearly describing specific resource conditions and visitor experiences to be achieved in various management areas throughout the park.
- Provide a framework for park managers to use when making decisions about how to best protect park resources, provide a quality visitor experience, manage visitor use, and develop facilities.
- Ensure that this basic foundation for decision making has been developed in consultation with interested stakeholders and adopted by park managers and the National Park Service leadership after an adequate analysis of the benefits, environmental impacts, and economic costs of alternative courses of action.

The Voyageurs general management plan is unique because it includes a visitor use and facilities plan. In 1983 Congress passed legislation directing the park to complete such a plan:

> The Secretary shall, in cooperation with other Federal, State, and local governmental entities and private entities experienced in the fields of outdoor recreation and visitor services, develop and implement a comprehensive plan for visitor use and overnight visitor facilities for the park. The plan shall set forth methods of achieving an appropriate level and type of visitation in order that the resources of the park and its environs may be interpreted for, and used and enjoyed by, the public in a manner consistent with the purposes for which the park was established. Such plan may include appropriate informational and educational messages and materials.

The visitor use and facilities plan was never funded. In 1996–97, a federal mediation process was conducted to address numerous issues about visitor use and management of the park. As a result of this process, the mediation panel recommended that the visitor use and facilities plan could be accomplished through the NPS general management planning process. The National Park Service agreed to develop the visitor use and facilities plan as part of this plan, primarily due to local interest. Therefore, the visitor use and facilities plan is now being developed in conjunction with the general management plan, and both are presented in this document. Both plans were based on the same available information.

## NEED

In August 1998 the National Park Service published a notice of intent to prepare a general management plan and environmental impact statement for Voyageurs National Park in the *Federal Register* and conducted four public scoping meetings in Minnesota to identify issues and concerns that the plan needed to address. A general management plan is needed to accomplish the following:

- Determine how best to ensure that the park's purpose and significance are maintained and that its mission goals are achieved.
- Resolve issues focusing on visitor use and interpretation, visitor and resource data collection, resource impacts, and necessary partnerships with entities outside the park to ensure appropriate management. (A detailed list of issues and concerns that were raised during scoping are presented beginning on page I–13.)

Specifically, Congress has directed the park to include the following items:

- measures for the preservation of the area's resources
- indications of types and general intensities of development (including visitor circulation and transportation patterns, systems and modes) associated with public enjoyment and use of the area, including general locations, timing of implementation, and anticipated costs
- identification of and implementation of commitments for carrying capacities for all areas of the unit
- indications of potential modifications to the external boundaries of the unit, and the reasons therefor

6

# DIRECTION FOR THE PLAN

The new general management plan for Voyageurs National Park will be based on its mission, purpose, and significance, as well as the large body of laws governing the National Park Service. These elements are derived from the park's enabling legislation and an examination of why it was originally designated as a national park. Desired future conditions or mission goals were then developed as a means to define the kind of place Voyageurs should become in 20 years. The alternatives presented in this document present various ways to achieve these mission goals.

## MISSION, PURPOSE, AND SIGNIFICANCE

The mission, purpose, and significance statements provide the context and basis for understanding and evaluating the draft alternatives. They were first stated in the park's 1997 *Strategic Plan,* which was publicly reviewed as it was being developed.

### MISSION STATEMENT

Voyageurs National Park preserves the landscapes and scenic waterways that shaped the route of the North American fur traders and defined the border between the United States and Canada. The park and its diverse resources provide outstanding opportunities for outdoor recreation, scientific study, sportfishing, education, and appreciation of the northwoods lake country setting.

### PURPOSE STATEMENTS

The purposes of Voyageurs National Park, according to its legislation, are as follows:

- Preserve the scenery, geologic conditions, and interconnected waterways within the park for the inspiration and enjoyment of people now and in the future.
- Commemorate the voyageurs' routes and fur trade with the Native peoples of the north, which contributed significantly to the opening of northwestern North America to European settlement.
- Preserve, in an unimpaired condition, the ecological processes, biological and cultural diversity, and history of the northwoods lakecountry border we share with Canada.
- Provide opportunities for people to experience, understand, and treasure the lakecountry landscape — its clean air and water, forests, islands, wetlands, and wildlife — in a manner that is compatible with the preservation of park values and resources.

### SIGNIFICANCE STATEMENTS

Voyageurs National Park is significant for the following reasons:

- The waterways of Voyageurs National Park include one of the most important segments of the fur trade route used in the opening of northwestern North America.
- Located near the headwaters of the Arctic watershed of Hudson Bay, the park's lakes — rather than land — have been the primary travel route throughout history. The lakes continue to shape transportation and recreational uses of the area today.

- The park's exposed rocks and landscape exemplify the glacial activity of the Pleistocene epoch and some of the most complete and extensive Precambrian geologic features in the United States.
- The park preserves the timeless beauty of woods, rocks, water, and sky that invite people to renew themselves through a variety of outdoor activities.
- The designation of Voyageurs as a national park is integral to the protection of the boundary waters ecosystem by both the United States and Canada. Along with Quetico Provincial Park and the Boundary Waters Canoe Area Wilderness, Voyageurs was and remains at the heart of a major conservation effort to protect the boreal forest landscape, its interconnected waterways, and associated wildlife.
- Voyageurs National Park holds vital evidence of the continuity of 10,000 years of human relationships with the environment uniquely dictated by the interconnected waterway system. The park provides an exceptional, largely unstudied storehouse of knowledge for the future and preserves resources associated with a long period of use, including those representing the fur trade, Native Americans, logging, and recreation.

### DRAFT INTERPRETIVE THEMES AND COMPELLING STORIES

The interpretive themes for Voyageurs National Park include the following; they are more fully described in appendix B.

*Geology:* The rocks of Voyageurs National Park are a geologic treasure, a foundation that has survived for nature to grow on.

*Voyageurs Waterways:* For two centuries the main economic enterprise in North America — the fur trade — funneled through this primary waterway route.

*A Place on the Edge:* Voyageurs is a place on the edge, a watery landscape on the edge of civilization, where people sought adventure, independence, freedom, and livelihood.

*Interaction of People and Landscape:* The landscape of Voyageurs National Park has dramatically shaped the lives of people. Successive cultures have left their marks on the land but have not changed its character, while the land has shaped the character of the cultures.

*Conservation Movement:* The conflict over building the Kettle Falls Dam — a battle of industrial development versus conservation of the waterway with its Native American subsistence lifeway — has sent ripples through time.

## MISSION GOALS

The following statements are desired future conditions or mission goals for the park. These statements describe what the park should be like and how it should be managed over the next 20 years to achieve these conditions.

### PARK RESOURCES

Voyageurs is restored and protected in a manner that allows natural processes, functions, cycles, and biota to be maintained in perpetuity. An adaptive, ecosystem-based approach to resource preservation has been implemented, with essential data and tools to support a scientifically based management program.

The natural beauty of the park is unimpaired. The park continues to be a dynamic, biologically diverse environment.

The park's viewshed is maintained to the extent that is possible to portray features and landscapes similar to those seen by the voyageurs.

Park lands that have been significantly altered by land uses in the past are restored to a natural condition.

Native plant and animal species diversity, abundance, and behavior reflect sustainable and naturally occurring conditions.

Listed threatened and endangered species occurring in the park are stable components of the park's ecosystem.

Exotic species have been controlled to the extent that they have a minimal impact on the ecosystem or they have been completely eliminated.

A fire management program is implemented that sustains a healthy, natural ecosystem.

Aquatic systems within the park are healthy and biologically functional. Water quality is at least maintained or improved from existing conditions.

The park and other entities work cooperatively to ensure that Voyageurs contains sustainable and healthy native fisheries.

Voyageurs' class I air quality is at least maintained, with no significant degradation from current conditions.

The park's wilderness resources, values, and characteristics are unimpaired, and its suitability for wilderness designation remains undiminished.

Visitor impacts and natural threats to cultural resources are minimal and mitigated whenever possible to ensure the preservation of resources.

Voyageurs' cultural resources, including archeological sites, historic structures, ethnographic resources, cultural landscapes, and historic objects that offer evidence of the long-term human relationship with the environment are preserved.

Resources representing major events, people, or places in the area's regional, national, and international history are accessible to the public and promoted as visitor destinations where appropriate.

Where feasible, compatible and appropriate uses are found for historic structures.

The park recognizes and respects the unique value system, religious practices, and lifeways of Native peoples in the management of resources.

Information, specimens, and objects reflecting natural, cultural, and administrative history of Voyageurs National Park are collected, documented, preserved, and made accessible to the public.

Biotic cultural resources such as wild rice, old-growth trees, and features in cultural landscapes are preserved.

## VISITOR EXPERIENCE, USE, AND FACILITIES

Visitors to Voyageurs National Park have many opportunities to experience solitude and tranquillity, to appreciate the expansive and undeveloped lakeshore and wetlands, and to see and enjoy the abundance and diversity of native plants and wildlife.

Visitors continue to find a diversity of quality opportunities in Voyageurs, allowing each person to enjoy the park in a safe and respectful manner, with only minimal conflicts between visitors.

Visitors have opportunities to experience predominantly natural sounds and natural surroundings in some areas of the park throughout the year.

Facilities and services needed by Voyageurs' visitors are high quality and sufficient to accommodate day and overnight visitors without compromising park values or adjacent public and private resources.

People with disabilities have opportunities to use visitor facilities and to experience park attractions and resources in many areas of the park.

The park is nationally and internationally recognized for its exceptional opportunities for diverse, high-quality visitor experiences of its natural and cultural resources and its exceptional fishing.

Park visitors and the general public understand and appreciate the significance of Voyageurs, and they support the preservation of the park and its resources for this and future generations.

Park programs facilitate an understanding and appreciation of Voyageurs' natural and cultural resources and human history.

The park is nationally and internationally recognized for its unique educational opportunities both at the park and through communications technologies.

Visitor experiences are enhanced by a unified partnership between the park, park concessioners and incidental business permit holders, and adjacent private and public entities who understand and appreciate the significance of the park and its surrounding lands and people.

Tourism activities and related educational programs are encouraged and supported by the park when they are compatible with the park purposes.

Visitors are well informed about the susceptibility of the park's resources to damage and comply with regulations to ensure resource preservation and a quality visitor experience.

The park uses a defensible statistical methodology for counting visitors.

Qualitative carrying capacities provide effective guidelines for visitor use opportunities.

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

All park facilities are safe, sound, sanitary, and sustainable. Their operation has no degrading impact on the natural environment or the visitor experience. All decisions regarding park operations and facilities management and development in Voyageurs reflect principles of resource preservation and conservation.

Park staff know and understand visitor use trends, patterns, and needs, and they strategically anticipate future issues and opportunities, based on an understanding of the park and surrounding recreational use areas.

The park is adequately staffed to ensure that appropriate management, resource and visitor protection, and education occurs.

The park staff maintains high levels of coordination and cooperation with all entities, both private and public, whose programs affect, or are affected by, Voyageurs National Park.

The park invites and seeks public involvement as an important part of the management process.

Partnerships that enhance the management of the park are the norm.

The park encourages scholarly research in the park that is pertinent to park goals and objectives.

The park has a multidisciplinary and multi-age education and outreach program that is curriculum based and focused on park significance.

## LAWS, REGULATIONS, AND POLICIES AND THE PLANNING PROCESS

All alternatives considered in this *Final General Management Plan / Environmental Impact Statement* are consistent with existing laws, regulations, and policies governing the National Park Service. As stated in the 1916 act that established the agency, the purpose of national parks "is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The NPS *Management Policies 2001* (2000) direct parks on how to interpret this purpose, as described in more detail in "Chapter 4: Environmental Consequences."

All federal agencies, including the National Park Service, are governed by the requirements of the National Environmental Policy Act (NEPA) of 1969, as well as other laws, including the National Historic Preservation Act and the Endangered Species Act. The National Environmental Policy Act requires agencies to consider the environmental effects of actions they propose before making any final decisions. The planning process that was used for Voyageurs National Park to achieve this is briefly described below:

> **Public scoping was conducted, the park's purpose and significance were reviewed, and desired future conditions were developed** — Meetings with the park staff and the public were held to identify the particular problems and issues that should be addressed by a general management plan. The purpose and significance of the park were also analyzed to see what opportunities or issues should be considered, and desired future conditions were developed.
>
> **A range of alternatives was developed and impacts were analyzed** — A range of alternatives for addressing a particular problem or need were identified. After work on the planning project was started and the public had a chance to review preliminary alternatives, the planning team made an initial decision on a particular approach to achieve its goals; this is called the proposed action. The impacts of the proposed action and a full range of other reasonable alternatives were analyzed and their impacts compared.
>
> **The *Draft General Management Plan / Environmental Impact Statement* was released** — The alternatives and their environmental analysis were released to the public for comment.

**Public comments were analyzed** — All comments submitted by agencies or the public that questioned facts in the *Draft General Management Plan / Environmental Impact Statement*, that requested or offered new information, or that were otherwise substantive in nature were considered as part of the planning process. Similar comments were combined into "issues," and members of the NPS interdisciplinary team of staff and contractors responded to them. In addition, text in volume 1 was modified as needed to update or correct it. The National Park Service considers public comments in making a final choice from among the alternatives. In this case, the Park Service made some changes to the proposed action to make it more consistent with public opinion and available visitor use and impact information. This modified proposed action is now the National Park Service's preferred alternative for implementation as the general management plan for Voyageurs National Park.

**The *Final General Management Plan / Environmental Impact Statement* is released for a 30-day no-action period** — The revised impact statement is released to the public. For this planning project the final document consists of two volumes: volume 1 is the *Final General Management Plan / Environmental Impact Statement*, which included all the changes made to the draft document as a result of public review, and volume 2, which includes indexes to comment letters and topics, responses to comments, and copies of all letters containing substantive comments.

**The record of decision is signed** — Following the release of the final document, a record of decision is signed by the Regional Director of the National Park Service's Midwest Region. Barring any new information or other circumstances unknown at this time, it is assumed that the modified proposed action will be approved as the general management plan for Voyageurs National Park. The general management plan is then implemented, subject to additional environmental analysis for site-specific actions.

The *Final General Management Plan / Environmental Impact Statement* for Voyageurs National Park is programmatic in nature. This means most of the policies apply to large areas of the park, to certain types of recreational uses that occur in many places in the park, or to the entire park. Impact information is likewise broad-based and focuses on types of resources or types of impacts, rather than on the specific location of those impacts. If site-specific information is not presented here, the park will prepare additional impact information pursuant to the requirements of the National Environmental Policy Act before implementing the actions in the plan. The regulations governing the NEPA planning process include the regulations of the Council on Environmental Quality (40 CFR 1500-1508), the NPS *Director's Order 12: NEPA Compliance Guideline*, and its accompanying handbook *(Conservation Planning, Environmental Impact Analysis and Decision Making)*. Information on other laws, including the National Historic Preservation Act and Endangered Species Act, is included in the "Summary of Regulations and Policies" section of "Chapter 4: Environmental Consequences."

# PROBLEMS, ISSUES, AND CONCERNS

Problems, issues, and concerns for this planning effort were raised by the public, the Visitor Use and Facilities Plan Consultation Group, other agencies, and the park staff. These issues, which are addressed by the alternatives, provide insight into the challenges facing the park.

## VISITOR EXPERIENCE, USE, AND FACILITIES

*Balancing Recreational Experiences and Uses.* Many visitors stated that various uses in the park must be balanced. Day visitors and houseboaters both desire sand beaches. Many visitors want to ensure that a balance remains between houseboaters and other overnight users. Visitors have asked for more day use opportunities and activities. While many individuals have expressed a desire for more extensive facilities, such as campsites and trails, others have said that uncrowded and solitary experiences that visitors enjoy may be compromised by increasing levels of recreation, noise, and visual intrusions of boats, aircraft, and social encounters with other park users. The natural, serene character of the landscape is one of the most valued park qualities, according to park visitors. Preserving the park's natural splendor and resources for future enjoyment while increasing recreational opportunities is a major challenge.

*Providing Diverse Uses and Activities.* Visitors have stated that they desire more varied activities and that they want a diversity of destinations in the park. Visitors without access to a boat often find the park limiting since so many of the activities and destinations require access by water.

*Inadequate Visitor Use Data.* Since 1990 visitation at Voyageurs National Park has averaged about 243,000 visitors a year. However, reliable information about numbers of visitors, use patterns, visitor experience, and visitor needs is lacking for both summer and winter visitors. There are numerous entries to the park, both from private and public access points, making it difficult to track visitor use patterns. Without sufficient support data and systematic, reliable methods for gathering baseline visitor use information, management decisions that affect the public are difficult to substantiate.

*Need for Information about the Availability of Day and Overnight Sites.* Some overnight and day use visitors are frustrated since they cannot reserve a site, so they have no assurance of being able to find a developed site to use. Some visitors do not know that they can also use undeveloped sites. This situation is especially frustrating to visitors who have traveled lengthy distances or are in paddlecraft. Without an overnight site reservation system, there is no definitive method for visitors to know the location of unoccupied sites. As a result, visitors sometimes "claim" preferred sites several days in advance before they actually use the specific overnight location.

*Conflicting Uses of Sites.* There are 215 developed sites in the park for day and overnight use; however, the number of sites and their locations do not always meet current demand. Many visitors feel that more developed sites are needed. Day use sites are especially limited, although day visitors can now use tent and houseboat sites until 4 P.M. However, this causes conflicts with overnight users, and generates confusion about the availability of sites for overnight use.

*Insufficient Facilities for People with Disabilities.* Only the visitor centers, boat launch areas, tour boats, the Kettle Falls Hotel, and portions of mainland trails are accessible to people with disabilities. Accessible overnight and day use sites are limited; only one overnight site and eight day use sites or areas are accessible to people with disabilities.

*Conflicts with Houseboat Use.* Some visitors think that houseboaters monopolize the park both spatially and visually since park management policy allows an unlimited number of houseboats to use and moor at developed sites and undeveloped areas. An unlimited number of houseboats can diminish the visual, quiet, remote experience many visitors are seeking. Additionally, houseboat traffic in narrows and congested areas contributes to safety concerns.

*Need for Group Campsites.* Because of camping restrictions in the neighboring Boundary Waters Canoe Area Wilderness and Quetico Provincial Park, coupled with a growing interest in large group camping trips, Voyageurs National Park has recently witnessed an increase in the number of large groups using the park. The sizes of these groups vary, but can include 70 people or more. There are no facilities in the park to accommodate such large groups. The largest tent sites can handle only 18 people.

*Lack of Recreational Vehicle Camping.* There is no automobile-oriented or recreational vehicle (RV) camping facility in the park, and Rainy Lake is lacking this type of camping opportunity near the water.

*Insufficient Trails (Nonmotorized).* There are not enough hiking trails, especially on the mainland where visitors without boats have few options to experience park resources. Limited cross-country ski and snowshoe trails in the park do not provide for adequate winter recreational opportunities, and some visitors feel that winter use on the large lakes is dominated by snowmobiles, which may reduce the quality and safety of nonmotorized experiences.

*Managing Boats on Interior Lakes.* The Boats-on-Interior-Lakes (BOIL) program causes difficulties for park managers as some visitors misuse the system by damaging the boats or failing to use the boats when reserved.

*Hazardous Situations for Bicyclists and Pedestrians.* Bicyclists and pedestrians use park entry roads to the Rainy Lake, Kabetogama, and Ash River visitor centers. These roads have not been designed for shared use. This situation creates unsafe conditions and reduces the quality of the visitor experience.

*Inadequate Parking.* Significant numbers of visitors and nearby property owners remain in the park for three or more days, leaving their vehicles in parking spaces throughout their stays. Parking use often exceeds capacity during peak periods of visitation. The Crane Lake ranger station does not have parking for visitors, so people visiting the facility must park along roads, increasing competition for the limited parking facilities in the community.

*Noise Impacts.* Some visitors object to noise from motorized uses, saying it reduces natural quiet in the park. Noise from fixed-wing aircraft or motorboats can be even more disturbing in the backcountry trail and primitive areas, where visitors often choose to travel by nonmotorized means. Sometimes large groups become noisy, disturbing the camping experiences of others.

*Limited Safety Programs.* Visitor contact and emergency services on the four major lakes are limited, and no ranger presence is provided in the backcountry trail or primitive areas. Therefore, visitors may not be provided with assistance and emergency services, which they expect or need. Proactive safety enforcement and safety education is limited to dockside bulletin boards, pre-trip information, and visitor center orientation programs/exhibits. These methods of information dispersal reach only a limited percentage of visitors, and results in abuses of park regulations, resource damage, and unsafe situations.

*User Group Conflicts.* Conflicts between different user groups may result in unsafe and unpleasant situations if visitors ignore safety etiquette or do not understand how motorized and nonmotorized uses are compatible. Snowmobile use dominates the four major lake surfaces during winter, creating issues of safety for cross-country skiers and snowshoers sharing the area. Users of motorized and nonmotorized craft must launch from shared facilities, which creates safety concerns and visitor conflicts.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

*Insufficient Visitor Contact*. More than half of the park visitors responding to a survey go to a visitor center, yet only limited numbers participate in interpretive or educational park programs. The development of visitor information publications and media has been limited by inadequate staff time and production money. The park has difficulty reaching many of its users through interpretive or educational venues to help them understand and appreciate the park. Over the last 10 years the hours of visitor center operation and length of season have been inconsistent. The Ash River and Kabetogama visitor centers only operate during portions of the year, thereby limiting opportunities for visitor contact and participation in educational programs at the primary park orientation facilities. This is especially a problem at Crane Lake, where visitor use is high and NPS presence is minimal and sporadic.

*Underdeveloped Interpretive Program*. In the past the interpretive program was unfocused and reactionary, with limited emphasis on the park's mission, purpose, and significance. Understaffed with little production money, piecemeal efforts have created a backlog of educational and interpretive needs. The development of interpretive programs and media is inconsistent and not strategic since there is no approved guiding plan. Only a few natural and cultural resource visitor destinations have been interpreted in the park, and most areas are void of interpretive media, as funding for interpretation has not kept pace with funding for facility construction and historic preservation. Although the history of the voyageurs is interpreted, visitors have difficulty knowing where to experience the routes followed by early explorers and fur traders, thus missing opportunities for an in-depth understanding of the voyageurs' history. Partnering with other entities has been the primary support for interpretation. The interpretive program meets the needs of diverse visitor groups, but most needs are only met superficially and not in depth, as some visitors desire. Partners have been identified to assist with research and park education, but the park lacks staff to collaborate with the partners on shared projects.

*Lack of Visitor Center Space*. There is insufficient room in the Kabetogama Lake and Ash River visitor centers to handle park guests during the peak periods of summer use. The Crane Lake ranger station is not designed as a visitor contact area and has inadequate space to meet current visitor use needs.

*Inadequate Distribution of Park Information*. As awareness, a national constituency, and out-of-state visitation to Voyageurs National Park expand, it is likely that the park will attract a greater percentage of first-time visitors with limited knowledge of the park. The dispersal of park information before visitors come to or enter the park is limited by inadequate visitor center operations, insufficient bulletin boards and waysides, and insufficient staff for roving patrols. The distribution and production of pre-visit information has been limited by inadequate staff time and lack of funding.

### CONCESSIONS

*Insufficient Strategies for Economic Viability*. The Kettle Falls concession suffers economic hardships due to a short visitor season, inadequate visitor use, access constraints, and high costs associated with maintenance and operations. No strategies for economic viability, while preserving and interpreting the historic character of the district, have been developed.

Concessioner tour boats do not stage out of Crane Lake, and visitors wishing to participate in a boat tour must travel one to two hours to the Kabetogama or Rainy Lake visitor center.

### INCIDENTAL BUSINESS PERMITS

*Inadequate Water Transportation Opportunities.* Unscheduled, expensive, or limited water taxi service hinders opportunities for visitors without boats to access peninsula trails, campsites, the Kettle Falls Hotel, and other visitor destinations. Options for visitors to rent motorized and nonmotorized boats, to use water transportation services, or to enjoy boat tours are inconsistent when examined parkwide.

*Limited Fixed-Wing Aircraft Services.* Commercial fixed-wing aircraft use is another water taxi service. Commercial fixed-wing aircraft access is limited to two locations in the park. Commercial scenic plane rides that start inside the park cannot be offered until an airtour management plan has been completed.

## NATURAL RESOURCES

The National Park Service is committed to developing an effective understanding of Voyageurs National Park's natural resources and the area's ecosystems. There is a need for enhanced resource protection for all the natural systems and a need to ensure that this management plan does not preclude potential wilderness designation.

### AIR QUALITY

*Regional Air Pollution.* Voyageurs is a class 1 area which, under the federal Clean Air Act, carries the most stringent standards (or increments) for maximum allowable increases in ambient pollution concentrations over baseline conditions. Monitoring data indicate an increasing trend in ozone concentrations, a possible reduction in visibility, and an increase in regional deposition of mercury. Criteria pollutants, such as nitrous oxides ($NO_x$) and particulates, are released inside the park from mobile sources. Cumulative impacts from regional mobile sources and industrial development from neighboring areas also can occur.

*Local Air Pollution.* The development and use of campsites, trails, roads, bike paths, and other park facilities may result in dust, or airborne particulates. Industrial sources near the park or to the south, as well as mobile sources, may compound this release.

### SOILS AND VEGETATION

*Visitor Use Impacts.* Day and overnight use — including camping, houseboating, firewood gathering, and picnicking at developed and undeveloped sites — causes trampling and the destruction of vegetation, erosion, soil compaction, and disturbance to wetland vegetation. This situation is exacerbated through the use of undeveloped sites and unrestricted group sizes. Campers may use the tent pads provided, but they also create new tent pads and social trails, and they often congregate at one tent site for meals and programs. Currently large groups of people (30 or more) sometimes gather at sites intended for 9 to 18 people. Vegetation can also be affected by burns caused by escaped campfires, particularly at undeveloped sites.

*Effects of Exotic Species.* Currently exotic plants are managed only minimally, with no parkwide systematic monitoring in place. If left unattended, exotics could displace native species, in some cases over a substantial portion of their range in the park. Wetland invaders are of particular concern, since they spread quickly. Purple loosestrife is a wetland plant from Europe and Asia that has invaded the park's lakes and replaces native wetland vegetation. Another species with potential to invade park waters is the Eurasian watermilfoil, which is spread by boats and waterbirds.

*Fire Management.* The park's pine forests are fire dependent, and in the past they generally burned every 20 to 25 years, with a large fire every 80 to 100 years. Land use changes in adjacent landscapes and the suppression of fires for safety and property damage reasons has led to differing species abundance and distribution than in pre-settlement times. This is contrary to NPS policies to restore natural ecosystem processes.

*Impacts on Wetland Vegetation.* Visitors accessing sites, particularly undeveloped sites, can trample aquatic or wetland vegetation. Managed lake levels add to this effect by altering the structural diversity of shoreline vegetation, and by reducing the amount of wetland vegetation in some cases.

Trails and campgrounds planned in some alternatives may result in the incidental removal of wetland vegetation, or might have to be relocated to avoid wetland species of special concern, including floating marsh marigold.

### WATER QUALITY AND HYDROLOGY

*Pollutants from Motorized Craft.* Motorized craft, including houseboats, motorboats, and snowmobiles, emit some portion of burned fuel as an oil and gas mixture, including toxic byproducts and fuel additives. Those byproducts from snowmobiles can enter the water column when ice melts in the spring. Grease and oil washed into park lakes from roads and parking lots, as well as from private land, has an additive effect.

*Effects of Graywater from Houseboats.* Houseboats release graywater and can be moored in shallow bays for several days. Graywater pollutants, which include suspended particulates, bacteria, and increased nutrients, can strip oxygen from water in the immediate vicinity of moored boats.

*Effects of Private Septic Systems near Lakes.* Cumulative impacts from leaking septic systems on private property adjacent to the park's large lakes are also possible. Kabetogama Lake is particularly sensitive to nutrient loading as it is shallow and tends toward eutrophy.

*Erosion due to Visitor Use and Development.* The use of existing campsites and day use sites, as well as the development of new sites, trails, visitor facilities, and park infrastructure could result in erosion into waterways and increased turbidity.

*Effects of Managed Lake Levels.* The International Joint Commission manages lake levels in the park, and this issue is beyond the scope of the general management plan. However, it is mentioned here due to the potential cumulative impacts that fluctuating levels may have on park resources. These effects include changes in the magnitude and timing of water level fluctuations, thus removing much of the natural hydrologic variability the lakes would normally experience.

### FISHERIES

*Coordinating Fishery Management.* The fish community of Voyageurs National Park is one of its most significant natural resources. Management of fish populations, particularly walleye, is undertaken principally by the Minnesota Department of Natural Resources, with consultation from the National Park Service and in cooperation with the U.S. Geological Survey's Biological Resources Division International Falls Biological Station. The Ontario Ministry of Natural Resources also helps manage shared fish populations in the border lakes. Although the federal and state agencies agree on the need to maintain sustainable fisheries, in some instances their management philosophies differ on how to achieve this goal. There is no coordinated fisheries management plan that provides goals and solutions to ensure the sustainability of the entire fish community and the health of the aquatic ecosystem.

*Effects on the Natural Fishery.* Management of the park's lakes to support a sport fishery has consistently led to a catch greater than target levels set by the Minnesota Department of Natural Resources. Managed lake levels have reduced reproductive success in years when the spring water levels are too low for optimal conditions for spawning by walleye or pike. These and other factors, including pollutants and habitat loss, may have destabilized the populations somewhat, exposing them to large-scale reductions if fishing pressure or other stressors increase. Motorboats emit some portion of burned fuel as an oil and gas mixture. Products of combustion and fuel additives emitted in the exhaust can have a direct effect on fish through increased morbidity or mortality or an indirect effect if fish consume contaminated vegetation or aquatic invertebrates. Exotic species, including rainbow smelt, zebra mussel, and rusty crayfish, have colonized waters in and adjacent to the park. These exotics have displaced native species and have had other ecological impacts.

### WILDLIFE, INCLUDING PROTECTED SPECIES

*Impacts on Wildlife.* Wildlife is disturbed by campers through noise, poor food storage, campfires, illumination from camping lanterns, occupied habitat, and wildlife/human conflicts. The use of undeveloped sites sometimes disturbs and displaces wildlife, and mooring at large can result in unintentional harassment of nesting eagles and other wildlife as boaters pull up to shore, or move slowly near wildlife to observe them. Effects on bald eagles may be compounded by proposed delisting and by pollutants in the park, including mercury and PCBs.

*Low Loon Reproduction Levels.* Reproductive success rates of loons in the park are lower than for other lakes in the region. Those on interior lakes show some evidence of disturbance by visitors using canoes or rowboats. In addition, nests on the shorelines of the park's large lakes are often flooded and destroyed by rising water levels in the spring.

*Impacts on Wolves.* Wolf packs using the Daley Bay area might be displaced or disturbed by the use of a proposed winter trail system through this area. This could be compounded by existing snowmobile access to some areas, proposed delisting of this species, winter weather, and human-caused mortality.

*Effects of Fire Suppression.* Suppression of fires results in more closed canopy or dense forest habitat, and less open area where forbes and grasses can grow. Some wildlife, in particular moose, deer, and some forest birds, use these openings for feeding.

*Effects of Noise.* Noise from motorized uses on lakes may disrupt nesting or other reproductive behavior or temporarily or permanently displace wildlife. Aquatic wildlife affected by high levels of noise may suffer additive effects on reproduction from contaminants, including mercury.

18

### WILDERNESS PROPOSAL

*Pending Action on the Wilderness Recommendation.* A wilderness proposal is currently in the office of the Secretary of the Interior, awaiting action. According to NPS policy, the National Park Service is not permitted to take any action that might diminish the wilderness suitability of an area recommended for wilderness study or designation.

## CULTURAL RESOURCES

### ARCHEOLOGICAL RESOURCES

*Focus of Inventory Efforts.* The park's archeological inventory to date has focused on accomplishing reconnaissance-level surveys in developed areas and along the shorelines of the major lakes. Archeological research should now focus on inventory of other areas of the park, including different landforms and specific resources such as those related to Ojibwe history, the fur trade, early settlement, and logging. More intensive evaluation of known sites should be conducted to determine significance, condition, and treatment needs. The majority of prehistoric sites and many historic sites are located along the shorelines of the major lakes. Any management or development activities along the shoreline have the potential to affect archeological resources. The park's program to stabilize archeological sites threatened by shoreline erosion has lagged in recent years, and a plan for protection of archeological resources is not in place.

*Effects of Visitor Use.* Visitors using undeveloped campsites can cause adverse impacts to archeological sites by digging fire pits and tent drainage ditches and by casually collecting objects. Users also cause shoreline erosion, which can harm archeological resources.

### HISTORIC PROPERTIES AND STRUCTURES

*Treatment Needs.* Approximately 600 structures have been inventoried and evaluated within the park. A total of 30 historic properties with 135 structures are on or eligible for listing on the National Register of Historic Places. The inventory of structures is largely complete, except for a few properties that remain in private ownership. Nine historic properties are currently occupied under use and occupancy reservations, which will expire within the next five years. Six properties and the damtenders cabin at Kettle Falls have been designated visitor destinations but are awaiting funding for interpretive development. Three properties serve an operational, visitor, or concessioner need and are regularly maintained. Four historic properties are in private ownership. Two properties have been documented and removed, and four others are designated for removal or are ruins that are considered an important cultural landscape feature. Two large properties, Monson's Hoist Bay Resort and I. W. Stevens Pine Cove Resort, are vacant and receive minimal maintenance. The greatest challenge for the park is to find uses for historic properties that are economically sustainable and compatible with other park goals and objectives. Hoist Bay is currently the subject of a reuse study that will explore alternatives for use. Many of these structures are in remote locations, making it difficult for the park to effectively monitor their condition and to protect them from vandalism.

Funding and staffing have been inadequate to complete documentation, to determine significance, to implement treatment plans, or to provide information for interpretation. Additionally, funding has not been allocated for exhibits or other educational media, although the intended use for several properties is park interpretation. As a result, some properties are seemingly vacant, and their intended uses are confusing to the public. Uses have not been identified for some properties, and others are vacant and deteriorating due to lack of commitment and funding or staffing resources.

### CULTURAL LANDSCAPES

*Incomplete Inventory and Evaluation.* The documentation of cultural landscapes has been limited to 22 sites. One site, the Ellsworth Rock Garden, has been determined as eligible, and 21 are potentially eligible for listing on the National Register of Historic Places. Documentation is needed on other potential cultural landscapes in the park to determine whether they are eligible for the National Register of Historic Places and to determine the most appropriate types of treatment. Without adequate information it is difficult to preserve, interpret, or protect cultural landscapes from vandalism, visitor impacts, potential development, or neglect.

Other potential cultural landscapes include properties associated with mining, logging, and early settlement. The historic waterway of the fur trade and associated resources such as portages could also be considered a potential cultural landscape.

*Inadequate Management Direction.* Potential cultural landscapes are present in three of the park's four developed areas (Kettle Falls, Ash River, and Kabetogama Ranger Station); however, no planning documents are in place to guide future development and to protect landscape features.

*Visitor Use*. The Ellsworth Rock Garden is a very popular visitor destination. An approved cultural landscape treatment plan calls for the partial restoration of the planting beds, the stabilization of key sculptures and other features, and the rehabilitation or preservation of buildings. Work is slowly being accomplished; however, information is not available to the public about treatment objectives at Ellsworth, so visitors tend to create their own trails, disturb sculptures, and overuse some areas.

### COLLECTIONS

*Lack of Access to Park Collections.* The park's museum, library, and archival collections contain specimens, objects, and information resources significant to the natural, cultural, and institutional history of the park. These resources are well organized, but afford limited access to the public.

### ETHNOGRAPHY

*An Incomplete Ethnographic Resource Inventory.* The park's ethnographic resource inventory is incomplete. The park has insufficient information about the location, extent, and significance of ethnographic sites (including sacred sites and burial sites), landscapes, and natural resources related to the culturally affiliated Native American tribes.

*Providing for Native American Use of Native Plants.* Preliminary information indicates that the Ojibwe use over 150 plant species thought to be present within the park and other Native Americans use over 360 species. Further inventory, survey, and consultation is needed to document contemporary plant use and to determine whether access to these species is needed by culturally affiliated Native American tribes for ceremonial use.

*Undocumented Ojibwe Ethnographic Sites.* The Ojibwe people are the Native Americans affiliated with the park. The park has limited information about the contemporary significance and importance of archeological and historic sites to these people. Preliminary information indicates that there may be ethnographic landscapes in the park that are important to Ojibwe tribes. These landscapes have not been evaluated for eligibility to the National Register of Historic Places as traditional cultural properties.

## PARK OPERATIONS, FACILITIES, AND PARTERSHIPS

*Staffing Shortages*. Over the years, visitation has increased and the park has steadily built new visitor facilities, but staffing has declined. The park does not have enough staff to provide basic park operations and visitor services and has depended increasingly on volunteers. Inadequate staffing limits programs for resource protection and management, visitor assistance, and preventive maintenance, as well as opportunities to develop interpretive publications, programs, and media to educate and assist the public. Basic operations support staff and funding are inadequate to meet NPS policies or federal and state mandates, such as those required by the Environmental Protection Agency or the Occupational Safety and Health Administration.

*Insufficient Facility Space*. Offices and storage space for interpretive and ranger staff at the Kabetogama and Ash River visitor centers are overcrowded and inadequate. Support facilities are also inadequate. Planning documents for these areas and Kettle Falls are either outdated or nonexistent; plans that do exist do not adequately address the integration of historic properties at Kabetogama Lake and Ash River.

*Inadequate Maintenance Facilities*. The Ash River maintenance hub, located west of the visitor center, is used by most park divisions. This key operations facility does not have adequate utilities, office space, storage space, or storage for flammable materials. Nor does it have adequate storage for vehicles and snowmobiles, and vehicles must be left outside here and at the Kabetogama Lake visitor center. This hinders operations, especially in the winter when temperatures fall far below zero.

*Ineffective Communication Systems*. Effective communication systems are not in place to fully monitor the park. Emergency assistance and protective services response time creates safety concerns for park visitors and rangers.

### PARK HOUSING

*Insufficient Staff Housing*. Park housing does not meet present needs. There is no permanent housing or workspace for park staff at Kettle Falls, so staff cannot be stationed at this site, which limits visitor assistance and information. The Crane Lake ranger station has limited housing for park staff, and no park housing is available in the Rainy Lake District. Within the park, winter housing is limited to a single structure that is increasingly in demand by researchers, as well as staff.

### PARTNERSHIPS AND COOPERATION

*Limited Trust and Cooperation.* Voyageurs National Park and the surrounding communities depend on the long-term sustainability of the environmental, social, and economic systems. While park managers recognize the importance of partnerships, the lack of collaborative and participatory approaches to park management in the past has resulted in misunderstandings and difficulties in building community support. Ways to build trust and develop better communications with communities have not been very effective. While the National Park Service is trying to address this situation, a successful resolution also depends on other entities outside the park.

*Limited Partnerships with Agencies.* As a consequence of limited communications and difficulties due to differing missions of the park and neighboring land management agencies, park planning has sometimes been in reaction to policies implemented by other agencies. Partnering strategies have not been fully explored between the park and local stakeholders (for example, the Minnesota Department of

Natural Resources, the U.S. Forest Service, Native American tribes, adjacent counties, and Canadian agencies) to identify common goals and devise compatible solutions to issues of common interest.

While cooperation with some surrounding entities is improving, there is still limited partnering to provide needed visitor facilities outside the park. The park on few occasions has offered the resources and expertise available through federal programs. Cohesive promotional efforts to expand park-related education beyond park boundaries and to encourage a resource protection ethic has lacked staffing, and park support has been sporadic and insufficient.

## SOCIOECONOMIC CONCERNS

The services and amenities provided by Voyageurs National Park attract visitors to the communities surrounding the park. While the nearby communities may provide a few of the same services as the park, they also provide many services not offered in the park, making the area attractive to a wider range of visitors. The relationship between the park and the surrounding communities generates shared socioeconomic costs and benefits.

*Community Marketing Strategies*. The extent to which a community's economy is affected by changes in park management depends on the size, economic diversity, and the community's marketing strategies. Determining the number of park visitors who desire public and private services depends on the economic development forecasts of the community. Providing visitor-related services will naturally have an impact on the social structure of the community.

Many current resort and tourist services are structured around resources that existed before the park was established. From an economic standpoint these tourist services generate a fairly consistent annual visitor base. However, weather conditions are the uncontrolled variable in the situation, which will determine the distribution of visitors throughout the seasons.

*Unstable Year-round Economy*. Current management practices and community structures contribute to a seasonal economic cycle in the surrounding communities. While summer has been the peak season, there have been significant gains during the last 10 years in the weather sensitive winter season. Increased winter visitation is the result of additional park amenities and the development of services in the surrounding communities to accommodate additional demands. This development has presented potential opportunities for the park and surrounding communities to create a more seasonally stable visitor base.

Sustaining the economy in the area will depend on:

- the ability of the park and surrounding communities to retain area visitors for a longer period, thereby increasing the potential for greater expenditures
- the ability of the park and surrounding communities to develop and promote a diverse activity base for attracting additional visitors and to provide a quality experience for a broader range of visitors
- the ability of the local economy to respond to new, expanded, or different visitor group needs
- the ability of the park and surrounding communities to develop a cohesive, distinctive destination image that recognizes the respective roles of the park and the surrounding communities in providing visitor services
- the ability of the community to respond to changes in the demand for goods and services created by changes in park operating revenues and staffing

22

# RELATIONSHIP TO OTHER PLANS, POLICIES, AND PROJECTS

## PRIMARY PLANS CONSULTED

Plans and studies used to develop this document are listed in the bibliography. The plans listed below directly influenced the development of the *Draft General Management Plan / Environmental Impact Statement* and the *Visitor Use and Facilities Plan*. Subsequent plans that will need to be prepared to implement the actions of this plan are also identified.

### 1980 *Master Plan*

The 1980 *Master Plan* is the current guiding document for the park. It no longer adequately addresses the policy and operational issues now facing Voyageurs National Park. A comprehensive plan is needed to provide overall guidance for the future of the park.

### 1981 *Interpretive Prospectus*

The 1981 *Interpretive Prospectus* is the current guiding document for the park's interpretive program. Although it no longer adequately addresses the operational issues now facing Voyageurs National Park, it provided guidance during the general management planning process. A comprehensive interpretive plan is needed to provide overall guidance for the park's interpretive program.

### 1988 *Lakecountry and Backcountry Site Management Plan*

The park's 1988 *Lakecountry and Backcountry Site Management Plan* guides the management and development of overnight and day use sites in the park. This plan provided guidance throughout the planning process. The goals for lakecountry and backcountry site management at Voyageurs are to (1) maintain the integrity of natural ecological processes; (2) protect and preserve historic and prehistoric cultural resources; (3) provide for satisfying experiences consistent with legislation, policy, and social demands; and (4) confine visitor impacts on recreation sites to acceptable levels. Criteria for site development outlined in this plan will continue to direct site development. The actions proposed in the *Final General Management Plan / Environmental Impact Statement* concerning an overnight permit/reservation system, use of undeveloped sites, required use of fire rings, number of sites, and other day use, tent, and houseboat actions would supersede the direction given in the 1988 plan.

### 1989 *Trails Plan*

The park's 1989 *Trails Plan* recommended summer and winter trail systems. These trail systems formed the basis for the 1992 *Final Environmental Impact Statement for a Wilderness Recommendation.* The trails proposed in the approved general management plan would supersede all trails that were previously proposed.

23

### 1989 *Wildland Fire Management Plan*

The park's *Wildland Fire Management Plan* guides the management of wildland fire based on desired future conditions. It provided guidance during the general management planning process, and it will be updated to be consistent with the management direction set forth in the approved general management plan.

### 1990 *Historic Structures Management Plan*

The park's 1990 *Historic Structures Management Plan* recommends the retention and treatment of historic structures in the park. This plan is being revised in consultation with the Minnesota State Historic Preservation Office and the public. The National Park Service will use this document when determining visitor destinations.

### 1992 *Final Environmental Impact Statement for a Wilderness Recommendation*

The park's enabling legislation directed the National Park Service to evaluate all land and water within the park for wilderness suitability. The National Park Service announced the beginning of the wilderness study process in September 1979, and in August 1980 a *Draft Environmental Impact Statement / Wilderness Recommendation* was released for public review. After public comments and revisions, a final *Wilderness Recommendation* and the accompanying *Final Environmental Impact Statement* were prepared, but were not reviewed or acted upon.

In June 1990 the Voyageurs Region National Park Association filed suit in United States District Court to enjoin all snowmobile use on the Kabetogama Peninsula and to require the Secretary of the Interior to submit a wilderness recommendation to the President. In April 1991 the court ordered that a wilderness recommendation be prepared and that snowmobile use on the Kabetogama Peninsula could continue. This decision was upheld by the court of appeals.

As a result, the National Park Service re-initiated the wilderness study process. All land and water areas within Voyageurs National Park were evaluated for wilderness suitability. The National Park Service determined that the major lakes (Rainy, Kabetogama, Namakan, and Sand Point) and Mukooda Lake were not suitable for designation as wilderness because of the traditional use of motorboats, snowmobiles, and aircraft, and because of the unnatural fluctuations in lake levels caused by dams outside the park. Approximately 10,999 acres of park lands were determined ineligible for wilderness because of park-related development, historic resources that are proposed for visitor use, Chippewa Indian lands, public access routes, and snowmobile safety portages, as well as areas that are too fragmented by other uses to be effectively managed as wilderness. A total of 128,884 acres of parklands and waters (59.1% of the park) were determined to be suitable for wilderness.

In 1992 the National Park Service recommended a total of 127,436 acres of lands and waters for wilderness designation, including 2,442 acres of potential wilderness additions. This amounts to 58.4% of the park or 98.9% of the area that met initial wilderness qualifications. Areas proposed as wilderness are so administered in order not to impair their suitability for eventual designation. They are managed for the long-term protection of wilderness character and values until Congress takes action. Only nonmotorized recreation is permitted within proposed wilderness areas. The proposed wilderness area includes the majority of wilderness qualities that make Voyageurs unique in the national park system — a land surface shaped by glaciation into a complex system of internal waterways, with a sense of vastness that is reinforced by a continuous forest mantle interrupted by bogs, beaver ponds, streams, sandy beaches, and rocky cliffs. This primitive landscape offers

24

numerous recreational opportunities for backpacking, hiking, canoeing, kayaking, fishing, cross-country skiing, nature study, and photography. Waters recommended for wilderness included all of the park's interior lakes except for the Chain of Lakes (Locator, War Club, Quill, Loiten), Shoepack, Little Trout, and Mukooda. The use of motorboats, aircraft, and snowmobiles would continue to be allowed on the major lakes (Rainy, Kabetogama, Namakan, and Sand Point), the Chain of Lakes (Locator, War Club, Quill, Loiten), Shoepack, Little Trout, and Mukooda, subject to existing special regulations. Existing winter snowmobile and proposed vehicle portages would also remain. The National Park Service released a *Final Environmental Impact Statement* in May 1992, which was signed by the director of the National Park Service. The National Park Service forwarded the *Wilderness Recommendation* to the Secretary of the Interior, where it awaits further action. The National Park Service is not proposing a modification of the 1992 wilderness recommendation.

This *Final General Management Plan / Environmental Impact Statement* treats all proposed wilderness areas as wilderness and anticipates the final resolution of wilderness issues as a future action. All actions proposed in this document, as well as all subsequent implementation plans (including a primitive area and proposed wilderness management plan), will be consistent with NPS wilderness policy requirements.

### 1994 *Resource Management Plan*

The park's *Resource Management Plan* (interim update in 2000) guides the management of the park's natural and cultural resources based on desired future conditions. It provided guidance throughout the general management planning process. This plan will be updated to be consistent with the management direction set forth in the approved general management plan.

### 1997 *Government Performance and Results Act (GPRA) Strategic Management Plan*

In 1997 the National Park Service developed a systemwide plan to meet the requirements of the Government Performance and Results Act of 1993. That plan directed each unit of the national park system to develop a five-year strategic management plan. Voyageurs National Park set forth a new set of mission, purpose, and significance statements, as well as long-term goals, in its 1997 *Strategic Plan*.

The planning team modified the mission, purpose, and significance statements found in the 1997 *Strategic Plan*, and the public reviewed them as part of the general management planning process. The goals of the *Strategic Plan* were revised in 1999, and they continue to be used to develop annual work plans. The approved general management plan will guide the development of future strategic plan goals and annual work plans over the next 20 years.

### 2000 *Kabetogama–Ash River Hiking and Ski Trail System Environmental Assessment*

An environmental assessment was prepared in 2000 to assess the impacts of a hiking and ski trail system between the park's gateway communities of Kabetogama and Ash River; such a trail was recommended as the preferred alternative. The proposed trail would not have a significant effect on the human environment. Negative environmental impacts that could occur would be minor and temporary. Based on the foregoing, it was determined that an environmental impact statement is not required for this project, and a "Finding of No Significant Impact" was signed. The *Environmental Assessment* will be used during the implementation phase of the approved general management plan.

### *Visitor Use and Facilities Plan*

In January 1983 Congress passed legislation that amended the boundaries of the park and called for a visitor use and facilities plan and a road access plan (see "Appendix A: Legislation"). Despite the enactment of this legislation 17 years ago, Congress did not appropriate funding for the visitor use and facilities plan.

However, when the National Park Service allocated funds for Voyageurs National Park to develop a general management plan, it was decided that the visitor use and facilities plan would be completed at the same time. The National Park Service made this decision because general management plans must address visitor use and facilities, which the 1983 legislation directed, and because the completion of a visitor use and facilities plan would be important to the communities surrounding the park.

According to the legislation, the Secretary of the Interior will work "in cooperation with other Federal, State, and local governmental entities and private entities experienced in the fields of outdoor recreation and visitor services" to complete the plan. The superintendent invited 47 governmental and private entities to participate in a Visitor Use and Facilities Plan Ad Hoc Consultation Group. These entities were selected based on their knowledge and experience in outdoor recreation and visitor services.

Throughout the planning process, the planning team considered comments from the consultation group on the proposed management alternatives and the draft proposed action, as well as all aspects of the visitor use and facilities plan. When approved, both plans will guide the management of Voyageurs National Park over the next 20 years.

### OTHER PLANS CONSULTED

The park's 1998 *Land Protection Plan*, 1992 *Scope of Collections Statement*, and development concept plans for developed areas were also consulted during this general management planning process.

## IMPLEMENTATION PLANS AND STUDIES TO FOLLOW THE GENERAL MANAGEMENT PLAN

The National Park Service will develop or revise the following plans and studies after the approval of the general management plan and visitor use and facilities plan:

**Existing Plans to be Revised**
Development Plans for Park Operations Areas
Historic Structures Management Plan
Lakecountry and Backcountry Site Management Plan
Land Protection Plan
Resource Management Plan
Trail Implementation Plan
Wildland Fire Management Plan

**New Plans**
Air Tour Management Plan (if directed by the Federal Aviation Administration)
Archeological Resources Protection Plan
Comprehensive Interpretive Plan
Disturbed Land Restoration Plan
Education and Outreach Plan

Facility Use Fee Feasibility Study
Fisheries Management Plan (in cooperation with the Minnesota Department of Natural Resources)
Houseboat Management Plan
Media Development Plan
Natural Resources Inventory and Monitoring Plan
Overnight and Day-Use Site Monitoring Plan
Overnight Permit System Feasibility Study
Primitive Area and Proposed Wilderness Management Plan
Research Plan
Site Development Plans for Visitor Destinations
Vegetation Plan
Visitor Experience and Resource Protection Monitoring Program
Water Resources Management Plan

# SCOPE OF THIS DOCUMENT

The scope of this *Final General Management Plan / Environmental Impact Statement*, as well as the *Visitor Use and Facilities Plan*, was determined by the issues and concerns that were raised during the public scoping effort, which included comments from public meetings and park staff, as well as written comments.

The *Draft General Management Plan / Environmental Impact Statement* was on public review from June 16, 2000, through October 23, 2000, which included two extensions of the original comment period. A series of public open houses were held in four cities in Minnesota the week of July 24–27, 2000. Approximately 2,000 individual letters were received by letter and electronic mail, plus verbal comments made at the open houses. The planning team reviewed all the comments to identify substantive comments. Substantive comments are those that question, with reasonable basis, the accuracy of information or the adequacy of the environmental analysis in the draft environmental impact statement, that present other reasonable alternatives, or that cause changes or revision to the proposed action. All substantive comments are summarized and responded to in volume 2 of this *Final General Management Plan / Environmental Impact Statement*, and all letters that were received are reprinted as well. Where a number of organizations or individuals submitted form letters with nearly identical content, one sample is printed along with the list of names of all others submitting that letter. Attachments to letters are not reprinted but are available for review at Voyageurs National Park headquarters, Highway 53, International Falls, MN.

## IMPACT TOPICS CONSIDERED

As a result of the public scoping process and the evaluation of actions considered under each alternative, the following impact topics are analyzed in this document:

**Natural Resources.** Impact topics include air quality, soils, vegetation, water quality and water resources, fisheries, wildlife, and species of special concern.

**Cultural Resources.** Impacts topics include archeological resources, historic structures, cultural landscapes, collections, and ethnographic resources.

**The Visitor Experience.** Impacts related to visitor use and facilities, noise and remoteness, safety, interpretation, visitor services and education are considered.

**The Social and Economic Environment.** Potential effects are discussed for resort and community economic needs.

**Park Operations, Facilities, and Partnerships.** Effects are considered for staffing levels, NPS facilities, and partnerships with outside entities.

## IMPACT TOPICS DISMISSED FROM FURTHER CONSIDERATION

### NATURAL RESOURCES

No additional impacts as a result of implementing any of the alternatives considered in this document would occur to lands proposed for wilderness designation in the park's 1992 *Wilderness Recommendation*. These lands would continue to be managed as required by NPS policies as if they had been designated as wilderness.

No additional impacts as a result of implementing any of the alternatives considered in this document have been identified for the following species of special concern. However, in every case park staff would conduct site-specific surveys before any ground disturbance took place to be sure they are not present, and they would reroute, relocate, or otherwise mitigate impacts if they are present.

### State Endangered Species

**Piping Plover *(Charadrius melodus)*.** This species may pass through the park but is considered a rarely seen transient (Grim 1986). No impacts from actions considered in this document are expected.

**Other Species.** The endangered awlwort *(Subularia aquatica)* has been identified in the park historically, but no evidence of new populations has been found (NPS 1998). Also, a species of lichen listed as endangered by the state (*Pseudocyphellaria crocata*) occurs in the park (NPS 1999).

### State Threatened Species

**Common Tern *(Sterna hirundo)*.** The common tern is a state threatened species and is monitored by state wildlife managers for possible future federal listing as an endangered or threatened species. The park also monitors terns and in 1999 initiated a recovery effort. Terns in the park attempt breeding on one of its small islands. Poor weather conditions and predation from other birds have been forces in keeping this small colony from successfully breeding to date (Grim, pers. comm. July 1999; NPS 1994). Common terns may also be affected by boat traffic; however, no additional impacts to this species as a result of implementing any of the alternatives considered in this document would occur.

**Pigmyweed *(Tillaea* or *Crassula aquatica)*.** Pigmyweed is a small and inconspicuous plant quite common in the park. It is found in shallow water in sheltered bays with clay or sand substrate. The nearest population to any of the actions proposed in any alternative in this document is many miles away and is not expected to be affected (D. Syzmanski, pers. comm.)

**Other Species.** Other species of birds on the state list of threatened species that very rarely pass through the park on their way north or south include Wilson's phalarope *(Phalaropus tricolor)* and the horned grebe *(Podiceps auritus)*.

The bog bluegrass *(Poa paludigena)* may also occur in the park (NPS 1999).

### State Species of Special Concern

**Wildlife Species.** The lake sturgeon *(Acipenser fulvescens)* is the park's largest fish, but is rare due to lasting effects of commercial fishing in the early 1900s. Sturgeon are very slow growing and long-lived; they feed on snails, clams, crayfish, and insects in the shallows of productive lakes. They spawn in these same shallows in late May and June. At 50 years they may reach 5 feet in length and weigh 50 to 60 pounds (Heinselman 1996). This species could benefit from regulating water levels under the International Joint Commission's supplementary order (see page I–135), but would otherwise be unaffected by actions contemplated in this document.

Habitat in the park is in the range of three additional mammals of special concern — the mountain lion (*Felis concolor*), smokey shrew (*Sorex fumeus*) and least weasel (*Mustela nivalis*). None of these species has been seen or captured during park monitoring studies in many years.

89

Birds that are listed as Minnesota species of special concern and that occasionally pass through the park while migrating include the short-eared owl *(Asio flammeus)*, yellow rail *(Coturnicops noveboracensis)*, and marbled godwit *(Limosa fedoa)*.

**Plant Species.** Vasey's pondweed *(Potamogeton vaseyi)* is an aquatic perennial herb that is quite abundant in Namakan and Crane Lakes, but rare elsewhere in the state (NPS 1998). It is found in isolated bays with up to 3 feet of water, but it does not occur anywhere in the park where it would be affected by actions in this document.

American shore-plantain *(Littorella americana)* has been identified historically in the park, but no recent observations have been noted, despite a parkwide survey of vegetation (NPS 1998).

Autumn sedge *(Fimbristylis autumnalis)* or curved-leaved golden moss *(Tomenthypnum falcifolium)* and two species of lichen of special concern *(Sticta fuliginosa* and *Calicum pseudorangiformis)* may also occur in the park (NPS 1999).

In addition to these formally monitored species, the park is host to more than 120 species of lichen (of 400 taxa collected in the park; Wetmore 1981) that were considered rare or newly discovered in Minnesota in 1981.

## ACTIONS BEYOND THE SCOPE OF THIS PLANNING EFFORT

Many important issues are being addressed by the *Final General Management Plan / Environmental Impact Statement* and the *Visitor Use and Facilities Plan*, such as resource protection, visitor experience and services, launch areas, facilities, uses on interior lakes, and overnight use. However, the following topics and issues are beyond the scope of these planning efforts and were not addressed:

> *Proposed wilderness* — The court-directed 1992 *Wilderness Recommendation* is currently in the office of the Secretary of the Interior, awaiting action. According to NPS *Management Policies*, no action will be taken to diminish the wilderness suitability of an area recommended for wilderness study or designation until the legislative process has been completed. This *Final General Management Plan / Environmental Impact Statement* treats all proposed wilderness areas as wilderness, as required by law, and anticipates the final resolution of wilderness issues as a future action. All actions proposed in this document, as well as all subsequent implementation plans, will be consistent with NPS wilderness policy requirements. (See page I–24 for more information.)
>
> *The National Park Service's authority to regulate water-based activities in the park* — This is a legal issue (*United States vs. Brown*). The federal court and the 8th Circuit Court of Appeals both upheld Mr. Brown's conviction for illegally operating a tour boat on the waters of the park. The U.S. Supreme Court has twice declined Mr. Brown's petition for certiorari. Therefore, this is not a pending legal question. It has been decided that the National Park Service may regulate water-based activities in the park.
>
> *Water levels in the park's major lakes* — This is an international issue, under the control of the International Joint Commission.
>
> *Modifications to the park's boundary* — No major changes have been identified.
>
> *Life estates and use and occupancy reservations* — The park's legislation directed that private land in the park be acquired. When the government acquired the properties, it entered into

contracts with the individual owners, some for outright sale, others for life estates or some period of use and occupancy. These contracts are beyond the scope of the planning effort.

*Hunting, trapping, logging, mining, and the use of off-road vehicles and personal watercraft* — These uses are prohibited in Voyageurs National Park under federal law or NPS policy.

*Banning the use of houseboats, motorboats, aircraft, or snowmobiles* — These uses will continue in the park. However, their use will be managed in parts of the park to protect park resources and visitor experiences.

31

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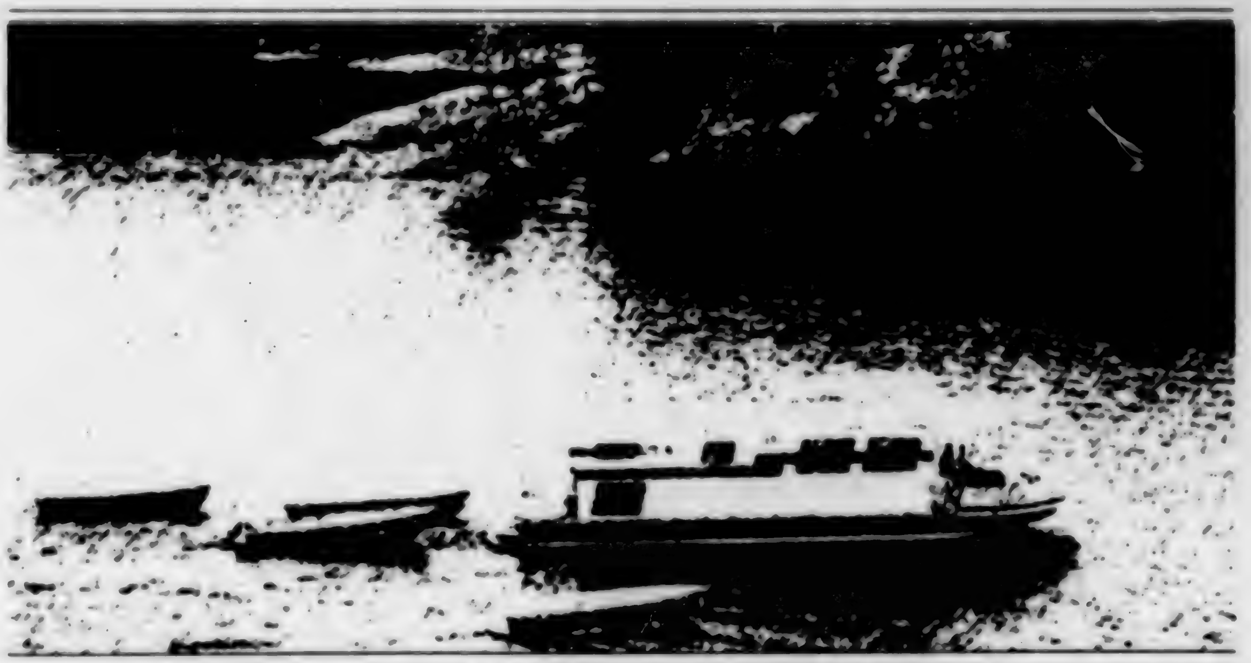
## Chapter Two

# *Alternatives, Including the Modified Proposed Action*

## 2

Process for Defining an Appropriate Range of Alternatives
Description of Management Areas
Existing Conditions
Alternative 1
Modified Proposed Action
Alternative 2
Alternative 3
Actions Considered but Rejected
Summary of Alternatives and Environmental Consequences



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# PROCESS FOR DEFINING AN APPROPRIATE RANGE OF ALTERNATIVES

The National Park Service's general management planning process follows the requirements of the National Environmental Policy Act, which requires that a broad range of alternatives be considered. One of the alternatives must be a no-action alternative or the continuation of current management policies, against which the other alternatives are compared. The range of alternatives is important in showing different approaches for managing the park in the future.

Before the planning team developed the three management alternatives and the draft proposed action, they solicited comments from the public, government agencies, and special interest groups through newsletters, meetings, and presentations. Most of the initial scoping comments received focused on issues facing the park or visions for the park's future. All comments received were summarized into topic and issue areas. As expected, comments spanned a broad range.

Using NPS policies and guidelines; the mission, purpose, and significance statements for Voyageurs; and the comment summary, the planning team developed a range of management alternatives. Each alternative focuses on a specific concept or approach for managing the park. The actions proposed in each alternative reflect this concept. The intent is for all concepts to support the park's mission, purpose, and significance statements, to avoid unacceptable resource impacts, and to respond to public desires and concerns.

Voyageurs National Park is only 25 years old. During this time many management decisions have been approved and implemented. For example, snowmobile and fixed-wing aircraft regulations were established, a *Wilderness Recommendation* was completed, visitor centers with boat launch areas were built, day use and overnight facilities were developed, numerous types of visitor services were provided, and many natural and cultural resource studies and protection efforts were and continue to be completed. During the scoping phase of this planning process, most people stated that they like the way the park is currently managed and they do not feel that any major changes are needed. In response to this input, the alternatives considered in this document all reflect a common belief that the park does not need a major redirection or complete overhaul in the way it is currently managed.

Initially, three draft management alternatives were developed and distributed for public review. Alternative 1 would continue the present course of action (referred to as the no-action alternative); alternative 2 would focus on resource preservation, partnerships, and balanced uses; and alternative 3 would emphasize visitor experience and opportunities. All of the comments received on those alternatives were compiled and summarized. The comment summary also included ideas or proposals that had not been considered to that point in the planning process.

Using the summary of comments on the alternatives, the planning team developed a draft proposed action, as well as refined the three management alternatives. To begin the process of developing the draft proposed action, a list of specific concepts was created as a guide. Based on the comments received during the review period, the actions proposed in the alternatives were evaluated and compared. A list of actions was prepared and used as the starting point for developing the details of the draft proposed action. The planning team discussed the advantages and disadvantages of each individual action.

The modified proposed action presented in this document is the result of review of the initial alternatives and the *Draft General Management Plan / Environmental Impact Statement* by the public, the Visitor Use and Facilities Plan Consultation Group, other governmental agencies, and organizations. A snapshot of the differences between the alternatives can be found in table 6, beginning on page I–87. The environmental impacts of the alternatives are summarized in table 7, beginning on page I–104. Maps for all of the alternatives, as well existing conditions, are included in the Maps section, beginning on page I–343. There are separate maps for summer and winter.

While a general management plan provides the analysis and justification for future funding, the plan in no way guarantees that funding will be forthcoming. The approved plan will establish a vision of the future that will guide day-to-day management of the park, but full implementation of the plan will likely require a number of years.

36

# DESCRIPTION OF MANAGEMENT AREAS

This section describes management areas that have been defined for the park. Management areas identify how different portions of the park would be managed to achieve certain resource conditions and visitor experiences. Each management area has a specific set of desired resource conditions and visitor experiences associated with it.

These management areas will be applied to the entire area of the park, but the locations and amounts of each management area depend on the particular emphasis of an alternative. For example, one alternative emphasizes more resource preservation with less development for visitor use, while another emphasizes the development of more visitor facilities. In addition, no-wake management areas would only be used under alternative 2.

(Note: In all management areas and alternatives, motorized uses include the use of motorboats, electric motors, fixed-wing aircraft, houseboats, and snowmobiles. Nonmotorized uses include canoeing, kayaking, paddleboating, rowboating, sailboating, skiing, snowshoeing, and hiking.)

## LAND MANAGEMENT AREAS

### DEVELOPED AREA

Developed areas are set aside for visitor facilities (such as visitor centers, contact stations, or group campgrounds) or for park operations (such as administrative offices, maintenance facilities, or employee housing). The rehabilitation of historic properties is generally more acceptable in developed areas than in other land management areas. Cultural resources in developed areas are fully accessible to the public.

- *Visitor Experience* — Facilities are convenient and accessible. These areas provide many social experiences through visitor contact and interpretive programs. The probability of encountering other visitors and park staff is high.
- *Resource Condition* — New facilities or modifications of existing facilities for visitor use or park operations are designed and implemented to be sensitive to the natural environment, the architectural character of historic properties, and cultural landscape features.
- *Appropriate Visitor Use and Facilities* — Appropriate facilities and their accompanying uses include buildings, interpretive exhibits, overlooks, concession services, paved and unpaved trails, docks, boat launches, picnic areas, roads, parking lots, small campgrounds, and park operations.

### LAKECOUNTRY AREA

This area includes the shoreline and islands of the four major lakes that are within the park as well as the north shore of Crane Lake.

- *Visitor Experience* — The natural setting is the dominant experience, but visitors have access to developed park facilities. The lakecountry area offers a moderate to high degree of challenge and adventure for visitors. The probability of encountering other visitors and hearing noise is moderate to high during certain times of the year. A moderate level of interpretation is offered.

- *Resource Condition* — Natural resources are managed to maintain natural conditions. Visitor facilities are built to reduce the impact of use. Places that collectively illustrate the history of human relationships with the natural environment and the evolution of the landscape through time will be preserved. Particularly sensitive or rare resources are protected from development and visitor use.

- *Appropriate Visitor Use and Facilities* — Appropriate uses include fishing, day use and overnight activities, cross-country skiing, and snowshoeing. The number of overnight and day use sites varies according to the subareas defined below. Snowmobile safety portages cross some of this area. Visitors will have an opportunity to learn more about the park's natural and cultural resources through visitor destinations with specific interpretive themes. The level of development and kinds of facilities at the visitor destinations would be commensurate with the goals for the management area it is located in and the ability of resources to withstand use and development.

The lakecountry area is divided into three subareas. The visitor experience, resource condition, and uses and facilities described above apply to all subareas.

- *Subarea 1 (high density):* This subarea has a high density of day and overnight sites. There may be three or more sites within a ½-mile radius. Typically, sites are found near shoreline areas that are protected from lake effects due to orientation and sheltered conditions. Generally, cultural resources are preserved in their existing condition. A greater degree of development to provide access to the public is acceptable (e.g., docks, trails, vault toilets, exhibits).

- *Subarea 2 (moderate density):* This subarea has a moderate density of day and overnight sites specifically fewer than three sites within a ½-mile radius. Secluded areas, islands, or shallow, rocky environments are appropriate for this designation. The development for public access is less visible and may be limited to a wayside exhibit or sign and a mooring aid.

- *Subarea 3 (low density):* This subarea may not be suitable for day or overnight sites, even though there may be a few areas that are suitable for low-density visitor use. The maximum site density is one site per ½-mile radius. Shorelines in this area could include wetlands that border shallow waters, islands less than or equal to 2 acres, significant wildlife habitats, visitor destinations, scenic view sites, and trailheads.

### BACKCOUNTRY TRAIL AREA

This area includes hiking, cross-country ski, and snowshoe trail corridors, where visitors can enjoy the park's natural environment.

- *Visitor Experience* — Visitors feel immersed in a natural landscape. Natural sights and sounds dominate, but human sounds can be heard. Visitors experience a high degree of challenge, adventure, and solitude. The probability of encountering others is low to moderate. Some interpretive media and naturalist-led interpretive programs are offered.

- *Resource Condition* — Natural resources are managed to maintain natural conditions along trail corridors. Management actions are taken to a high degree to ensure resource protection and visitor safety. Cultural resources in the backcountry are protected from development or other situations that may impact their integrity and are not made accessible to the public.

- *Appropriate Visitor Use and Facilities* — Appropriate uses include hiking, camping, wildlife watching, picnicking, cross-country skiing, and snowshoeing. The backcountry trail area includes unpaved hiking trails, campsites, groomed and ungroomed cross-country ski trails, and snowshoe trails.

### PRIMITIVE AREA

Primitive areas consist of both proposed nonwilderness and proposed wilderness in the park's backcountry except for trails, including areas recommended for wilderness designation. Visitors can expect a "wild" experience, with few facilities.

- *Visitor Experience* — Visitors feel fully immersed in nature. Primitive areas offer a high degree of challenge and adventure and a low probability of encountering other visitors. Human sounds are infrequent. No interpretive programs are offered.
- *Resource Condition* — These areas are managed as natural areas. Research and prescribed fires may occur, but other actions are limited. Impacts from use are low to none because of difficult access. Cultural resources in the primitive area are protected from development or other situations that may impact their integrity and are not made accessible to the public.
- *Appropriate Visitor Use and Facilities* — Appropriate uses include at-large camping, hiking, snowshoeing, and cross-country skiing. A few campsites with minimal facilities may be appropriate.

## WATER MANAGEMENT AREAS

In all water areas, visitors traveling independently need marine and self-sufficiency skills. The mood and character of these areas changes according to weather and water conditions.

### INTEGRATED USE AREA

This area includes the four major lakes, the special use zone on Kabetogama Lake, the Chain of Lakes on the Kabetogama Peninsula, and other interior lakes currently open to motorized uses.

- *Visitor Experience* — A feeling of nature often dominates this area, but human sights and sounds can be expected. The potential to encounter other visitors is moderate to high. Interpretive programs are provided through a variety of boat tours.
- *Resource Condition* — Natural resources are managed to maintain healthy aquatic ecosystems, including fish, wildlife, and water quality. Management actions are taken to ensure resource protection and visitor safety.
- *Appropriate Visitor Use and Facilities* — Appropriate uses include motorized and non-motorized watercraft, fixed-wing aircraft, fishing, swimming, snowmobiling, cross-country skiing, wildlife watching, and snowshoeing. Facilities include safety buoys and navigational markers, groomed and non-groomed snowmobile trails, and a plowed ice road.

### NONMOTORIZED USE AREA

This management area includes interior lakes surrounded by primitive areas or proposed wilderness where motorized use is not appropriate.

- *Visitor Experience* — Visitors feel immersed in nature and experience a high degree of tranquillity, quiet, and solitude. Human sounds are low to moderate. Few to no interpretive programs are offered.
- *Resource Condition* — Natural resources are managed to maintain healthy aquatic ecosystems, including fish, wildlife, and water quality. Management actions are taken to ensure resource protection and visitor safety.
- *Appropriate Visitor Use and Facilities* — Appropriate activities include paddling, fishing, swimming, and at-large cross-country skiing and snowshoeing.

### NO-WAKE WATER AREA (ALTERNATIVE 2 ONLY)

This area accommodates summer motorized and nonmotorized uses for visitors seeking quiet areas for fishing, wildlife watching, and touring on the four major lakes. No-wake water areas are shallow bays with identifiable, constricted entries away from the main travel routes. Boaters operate at no-wake speeds.

- *Visitor Experience* — The setting is quieter than in motorized water areas. Visitors experience a moderate to high degree of solitude. Some interpretive programs are offered.
- *Resource Condition* — Natural resources are managed to protect productive wetland areas for nesting birds, spawning fish, and other wildlife. Few management actions are taken for visitor safety and resource protection.
- *Appropriate Visitor Use and Facilities* — Appropriate uses include no-wake motorboating, paddling, fishing, and swimming. Minimal facilities such as safety buoys are provided.

# EXISTING CONDITIONS

The following information summarizes the current uses, facilities, visitor services, and operations at Voyageurs National Park. For ease of comparing what exists now with what the alternatives propose, this information is presented in the same order as the alternatives. (The description of visitor uses and facilities is organized according to the management areas described in the previous section.)

## NATURAL RESOURCES

Natural resources are composed of inherently complex organisms, processes, and systems. The natural resource policies of the National Park Service emphasize the need to manage natural resources and values in the parks in a systematic, consistent, and professional manner. These resources and values include ecosystems and their component plants, animals, water, air, soils, topographic features, geologic features, and aesthetic values, such as scenic vistas, natural quiet, and clear night skies. Natural processes and systems are dynamic, are often beyond immediate human control, and are affected by activities both within and outside national park system units.

The understanding of these processes and systems is far from complete, yet the National Park Service is charged with the management and protection of the park's natural resources into the future. The National Park Service's mandate is to maintain, restore, and perpetuate the inherent integrity of natural resources while providing opportunities for visitors to benefit from and enjoy natural environments that are evolving through natural processes that are minimally influenced by human action.

The park manages natural resources according to plans and policies. The resource management division oversees numerous inventory and monitoring programs, as well as research and land management projects. Biological inventories include occurrence, distribution, and relative abundance of vertebrate and invertebrate animal species and vascular and nonvascular plant species. Specifically, this division monitors bald eagles, wolves, moose, deer, beaver, black bears, ospreys, herons, loons, and colonial nesting waterbirds. The park also monitors air and water quality and visitor use. The resource management division coordinates a variety of projects conducted in the park by researchers. These research projects address fisheries and wildlife, water quality, vegetation, soils, and geology. The fire management program consists of wildfire suppression, wildland fire use, and prescribed burning. Nonnative or exotic plant and animal species are also managed.

Natural resource management is the function by which the National Park Service strives to understand natural processes and human-induced effects; to mitigate the potential and realized effects; to monitor for ongoing or future trends; to protect existing natural organisms, species, populations, communities, systems, and processes; and to interpret these organisms, systems, and processes to park visitors.

## CULTURAL RESOURCES

The park's 10,000 years of cultural history is represented by archeological resources, historic structures, cultural landscapes, ethnographic resources, and museum objects. An inventory and an evaluation of historic structures is nearly complete; approximately 10% of the park has been investigated for archeological resources. A cultural landscape inventory and an evaluation are just beginning. One cultural landscape, the Ellsworth Rock Garden, has been identified, and potential cultural landscapes include the Kettle Falls Historic District, Rainy Lake City, Hoist Bay, and the Kabetogama Ranger Station Historic District. Other cultural landscapes could include historic sites such as logging camps. An inventory and an evaluation of ethnographic resources have not yet begun.

41

The park has three historic districts, five archeological sites, and one structure on the National Register of Historic Places; 27 additional properties have been determined eligible for listing on the national register. Other eligible properties may be identified as the inventory and evaluation process continues throughout the park. The park's museum collection includes specimens and artifacts related to the natural and cultural history of the park, as well as archival records chronicling the legislative and management history of the park.

Kettle Falls, Ellsworth Rock Garden, the Ash River visitor center (Meadwood Lodge), and Little America Gold Mine have been developed as visitor destinations.

Several properties are in private ownership; many are leased through use and occupancy reservations, which will expire in the next few years and by law cannot be renewed. Finding uses for vacated historic properties, particularly recreational cabins, presents a challenge to park managers. Some have been identified as future visitor destinations and will serve as focal points for interpretation. Other properties have benefited from preservation funding, but they lack visitor facilities and interpretive media. Funding shortfalls have resulted in minimal attention to two large complexes, the former I. W. Stevens and Hoist Bay resorts. Although the use of the properties would provide the greatest level of preservation and protection, major work would need to be accomplished first, and appropriate uses have not be identified.

## VISITOR USE AND FACILITIES

### PARKWIDE MANAGEMENT

**Entry/User Fees and Overnight Fees/Permits/Reservations.** No user fees or overnight reservations are required to use the park.

### WATER MANAGEMENT AREAS

#### Motorized Use Area

**Integrated Use.** Motorized and nonmotorized uses, including watercraft, fixed-wing aircraft, and snowmobiles, are allowed year-round on the four major lakes (Rainy, Kabetogama, Namakan, and Sand Point) and on seven interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda). Users share launch areas.

**Houseboats.** An unlimited number of private and commercial (rental) houseboats are allowed to use park waters. The current number of commercial houseboats includes 55 in the Namakan District and 45 in the Rainy District.

**Fixed-Wing Aircraft.** A commercial shuttle to Shoepack Lake exists through a permit system. The holder of a permit to provide commercial fixed-wing aircraft service between the International Falls airport and Kettle Falls Hotel did not request a renewal.

**Boats on Interior Lakes.** The park provides nonmotorized boats on seven interior lakes during the summer, free of charge. Boats must be reserved for use.

**Snowmobile Trails and Portages/Vehicular Access.** There are 110 miles of groomed snowmobile trails and safety portages (including the ungroomed Chain of Lakes trail); and 7 miles of plowed ice road on Rainy Lake.

**Special Use Zone.** A special use zone exists for intensive spectator-related recreational activities and other activities directly associated with the Kabetogama resort community. All specialized events require a special use permit. Snowmobile "radar runs" are an illegal activity under 36 CFR 2.18(d) through (f). The special use zone boundary on the west is the Koochiching/St. Louis county line from the southern shore of Kabetogama Lake to a point ¼ mile offshore; on the north ¼ mile offshore from the parallel to the southern shore of Kabetogama Lake; and on the east a north/south line from the southern shore of Kabetogama Lake intersecting the westernmost point of Sphunge Island, to a point ¼ mile offshore.

### Nonmotorized Use Area

**Interior Lakes.** Integrated nonmotorized and motorized summer and winter use is allowed on Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda Lakes. All other interior lakes are open to nonmotorized use only.

## LAND MANAGEMENT AREAS

### Developed Area

**Visitor Centers.** The Rainy Lake visitor center is open year-round. The Kabetogama Lake visitor center (Kabetogama Ranger Station Historic District) and the Ash River visitor center operate seasonally. The Kettle Falls Hotel is open May to October. The Crane Lake ranger station operates only as a ranger office and currently has no scheduled hours for visitors.

**Day and Overnight Use Sites.** The 1988 *Lakecountry and Backcountry Site Management Plan* is the guiding document for developing tent, houseboat, and day use sites. That plan outlines criteria to determine the suitability of potential sites (for example, water access, wind exposure, and proximity to other sites).

There are a total of 215 individual and distinct developed day and overnight use sites in the park, as shown in the following table.

TABLE 1: TYPES AND CAPACITY OF DAY AND OVERNIGHT SITES, EXISTING CONDITIONS

| | | |
|---|---|---|
| Tent campsites | 112 small campsites (including 1 universally accessible site in Namakan District)<br>12 large campsites | 9 people<br>18 people |
| Small campgrounds | 2 campgrounds (5 sites each) | 45 people per campground |
| Group sites | 0 | NA |
| Houseboat sites | 78 | 2 boats per site |
| Traditional day use sites | 11 | No limit |

Overnight visitors are allowed to use undeveloped sites, as well as developed sites.

**Day Use.** Day use visitors can use developed tent sites and houseboat sites until 4 P.M. Day use visitors can also use undeveloped sites.

**Fires and Firewood.** Firewood gathering is permitted anywhere in the park, except for areas posted with "No Wood Gathering" signs. Fires are allowed in metal fire rings and previously established rock rings.

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**Backcountry Trail Area**

**Hiking, Skiing, and Snowshoeing Trails.** The park's existing trail system includes 24 miles of hiking trails, about 20 miles of groomed cross-country ski trails, and about 5 miles of tracked snowshoe trails.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

**Concessions and Visitor Services.** Most lodging, food, mainland camping, boat rentals, and recreation equipment outfitters are outside the park. Park concessions include the Kettle Falls Hotel and restaurant; seasonal tour boats (from Rainy Lake and Kabetogama Lake visitor centers); and Mukooda Lake boat and motor rentals.

**Interpretive Programs and Outreach.** Visitor centers and bulletin boards are the major visitor contact facilities. The park offers interpretive programs at all visitor centers and at the state's Woodenfrog Campground on Kabetogama Lake. Many programs operate in conjunction with concession tour boat operations. The park offers voyageurs reenactment North Canoe rides, interprets the voyageurs history, and conducts school programs on voyageurs history. The park offers outreach educational programs to local school districts and pre-visit information.

## PARK OPERATIONS, FACILITIES, PARTNERSHIPS, AND COOPERATION

In fiscal year 2000 Voyageurs National Park had 47 permanent employees and 41 seasonal employees. The park relies heavily on volunteer resources, and in fiscal year 2000 volunteers worked over 10,000 hours. Park facilities include office space, support facilities, and storage space that do not meet present needs. A facility in International Falls is leased for park headquarters.

The park has many established partnerships and memorandums of understanding with outside entities.

# ALTERNATIVE 1: PRESENT COURSE OF ACTION (NO ACTION)

Alternative 1 constitutes the no-action alternative and would continue current NPS management practices and actions at Voyageurs National Park. Park managers would continue to provide for visitor services, facility development, and natural and cultural resource protection according to current policy and as funding and staffing allowed. Established areas of integrated motorized and nonmotorized uses and no-fee access to the park and its facilities would continue. Strategies for visitor use data collection would be limited by available staff and current facilities. Trail development would be based on the trails shown in the *Final Environmental Impact Statement for a Wilderness Recommendation* (NPS 1992). New trails would be accessible primarily by water and would be concentrated on the Kabetogama Peninsula and islands. The 1988 *Lakecountry and Backcountry Site Management Plan* would direct the development of about 400 day and overnight sites, including existing sites, and the implementation of a mandatory free permit for overnight use.

## NATURAL RESOURCES

### PARKWIDE MANAGEMENT

Natural resources would continue to be protected in accordance with current plans and NPS policies, as staffing and funding constraints allowed. Programs such as controlling exotic species; removing vacated, nonhistoric cabins and restoring sites to natural conditions; and monitoring visitor use areas would be implemented to the extent possible. Limited baseline inventories and monitoring of park resources (e.g., wildlife, air quality, and vegetation) would continue. Ecosystem management through partnerships would continue on a limited basis. Limited monitoring would be conducted to detect resource violations and use trends negatively affecting resources.

Due to a lack of funding and a low priority, no action would be taken to survey and consistently mark park boundaries to clearly identify for visitors park areas and to help park management efforts.

### WETLANDS

Wetlands would be identified and delineated, if appropriate. Wetland restoration would be considered for those areas that had been damaged or degraded, and adverse impacts would be avoided or mitigated.

### THREATENED OR ENDANGERED SPECIES

Park managers would informally consult with the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources to determine (1) the possible presence of any threatened or endangered wildlife species listed by the federal or state government, or (2) designated critical habitat, in areas that could be affected by construction, visitor use, or restoration activities. Attempts would be made to avoid, minimize, or otherwise mitigate any potential adverse impacts on any listed, proposed, or candidate threatened or endangered species recognized by the state or federal government. Formal consultation under section 7 of the Endangered Species Act would be initiated if it was determined that an action might adversely affect such a species.

45

No federally listed, proposed, or candidate threatened or endangered plant species are known to occur within Voyageurs National Park. Surveys for these and other state rare or sensitive species would be conducted, incidental to any project. More intensive surveys in a project area would be conducted if similar habitats were present in order to determine the potential extent of rare populations. The intent would be to manage sensitive plant species to ensure the population's survival within the park. Any sensitive plants discovered in project areas would be protected from human-caused disturbance, and the project would be redesigned to avoid direct impacts on plants and their specific habitat, if possible. Formal consultation would be initiated under section 7 of the Endangered Species Act if it was determined through informal consultation that an action might adversely affect a listed or proposed species.

### FOREST MANAGEMENT

Southern transitional boreal forests would be allowed to mature without intervention.

### FIRE MANAGEMENT

The park's *Wildland Fire Management Plan* would continue to be implemented, recognizing limitations due to weather and available firefighters. Natural fire regimes would be reestablished to the greatest extent possible, without unduly reducing visitation or visitor enjoyment, through wildland fire use and prescribed fire to achieve management objectives.

## CULTURAL RESOURCES

### PARKWIDE MANAGEMENT

Park staff would continue to identify, evaluate, preserve, protect, and share information about all types of cultural resources in Voyageurs National Park (historic properties and structures, cultural landscapes, archeological resources, ethnographic resources, and collections).

Current partnerships for the preservation, protection, and use of cultural resources would be continued, and additional partnerships would be pursued.

Cultural resources would continue to be monitored through occasional, nonroutine patrols as time and funding permitted.

### ETHNOGRAPHIC RESOURCES

Native Americans have important cultural connections with the park. Opportunities for visitors to observe, experience, and learn about traditional practices would be continued.

Research to better understand the historical occupation and uses of the park by Native Americans, as well as ongoing uses (such as wild rice harvesting and use of sacred sites), would be continued. Park staff would seek greater involvement with them in the management of ethnographic resources.

Park managers would consider requests from traditionally associated tribes for site access.

Native American sites would be protected by diverting development, access, and transportation routes away from those sites.

46

### CULTURAL LANDSCAPES

All eligible landscapes in the park would be documented. Features at areas identified as potential cultural landscapes (e.g., Kettle Falls, Hoist Bay, Kabetogama Ranger Station Historic District) would be protected from inadvertent damage or destruction. Ellsworth Rock Garden would be partially restored as directed by the "Preservation Treatment Plan" (1998). The park would retain evidence of habitation in the form of chimneys or foundations or other important indicators of human habitation when buildings were removed. However, such remains would be removed in places where other park development was planned, where the remains were considered a serious safety hazard, or where they were considered an unacceptable visual intrusion.

Treatment recommendations for landscapes at Ash River would be completed. Also, the historic waterway study would be completed. Through vegetation control, landscape features (such as earthen embankments) would be protected at selected historic archeological sites.

### ARCHEOLOGICAL RESOURCES

The integrity of archeological sites, as identified in the *Cultural Resources Management Plan* and through future inventories, would be maintained. The park would continue to inventory and evaluate archeological resources, as directed by the *Cultural Resources Management Plan* and allowed by funding. Efforts would be made to prevent further damage to significant sites threatened by erosion.

Damage to aboveground resources would be prevented through vegetation management. Potential impacts to archeological resources would be minimized by avoiding them or hardening the surface. One way archeological resources would be protected is to formally develop a tent site with the addition of fill material for tent pads or picnic table pads or by directing traffic away from resources by developing formal trails or controlling vegetation.

### HISTORIC PROPERTIES AND STRUCTURES

The *Historic Structures Management Plan* for Voyageurs provides the framework for current treatment decisions. The plan was completed in 1990 in consultation with the Minnesota State Historic Preservation Office and is currently being revised. Under this alternative the park would continue to follow the recommendations for treatment and use presented in the 1990 plan and preserve 21 properties with multiple structures (70% of the park's properties eligible for the National Register of Historic Places). Historic properties awaiting full treatment would be stabilized and protected until funding became available.

The treatment of historic properties would focus on retaining at least one property that best represents each of the park's cultural themes. (For a complete list of themes please see appendix C.)

The use of historic properties for park operations and interpretation would be continued.

### COLLECTIONS

Objects, specimens and records representative of Voyageurs' natural, cultural, and administrative history would continue to be collected, recorded, and safely housed. The collection would be regularly maintained and would receive conservation treatment as needed. Access to the collection for staff, researchers, and the public would remain limited.

### PUBLIC ACCESS

Public access would continue to be encouraged and formally developed at cultural resources that have been identified as visitor destinations, including Kettle Falls, Ellsworth Rock Garden, Little American Island, Ash River, and the Harry Oveson fish camp. Other historic properties would be preserved but not formally developed for public access.

## VISITOR USE AND FACILITIES

### PARKWIDE MANAGEMENT

Visitor facilities would continue to be developed according to current plans and NPS policies and as allowed by staffing and funding constraints. New development and rehabilitation would depend on funding and partnership support. Methodologies and strategies for visitor use data collection would be limited by available staff and current facilities.

**Overnight Permit System.** A no-fee, self-registration permit would be required for all overnight use in the park (as recommended in the approved 1988 *Lakecountry and Backcountry Site Management Plan).*

**Entry/Facility Use Fees.** No-fee access to the park would continue for all users, recognizing that Congress could direct the park to institute an entrance fee in the future. No fees to use facilities (such as campsites or parking areas) would be established.

**Visitor Experience and Resource Monitoring.** Park staff would continue limited collecting of visitor use data, visitor use patterns, visitor needs and experience, visitor survey cards and comment boxes, resource impacts of day and overnight use, and restoration needs.

### WATER MANAGEMENT AREAS

#### Integrated Use Area (Motorized and Nonmotorized Uses)

**Integrated Use.** Motorized uses (including watercraft, private fixed-wing aircraft, and snowmobiles) and nonmotorized uses would continue to be allowed year-round on the park's four major lakes and the seven designated interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda).

**Overnight Houseboat Use.** An unlimited number of houseboats would be allowed in the park. No certificates for sanitation compliance for houseboats that navigate park waters would be required. Concession contracts or permits for commercial houseboats would not be established.

**Fixed-Wing Aircraft.** The commercial shuttle to Shoepack Lake would be continued, and a commercial shuttle between the International Falls airport and Kettle Falls Hotel could be reestablished. Private fixed-wing aircraft use would continue on the four major lakes and the seven designated interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda).

**Boats on Interior Lakes.** The park would continue to provide nonmotorized boats on seven interior lakes free of charge.

**Snowmobile Trails and Safety Portages/Vehicular Access.** The existing snowmobile trails and safety portages would be retained. The Mukooda Lake snowmobile portage and truck route would be retained in the current condition.

**Special Use Zone.** Continue to manage and approve special use permits in the special use zone. The special use zone would be used for spectator-related recreational activities and other activities directly associated with the Kabetogama resort community. (As previously stated, snowmobile "radar runs" are illegal under 36 CFR 2.18 (d) through (f).) All specialized events would require a special use permit. Boundaries for the special use zone would be the same as described on page I–43.

### No-Wake Water Area

No-wake boating areas would not be designated on the four major lakes.

### Nonmotorized Use Areas

**Interior Lakes.** Integrated motorized and nonmotorized summer and winter use would continue to be allowed on Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda Lakes. On all other interior lakes only nonmotorized uses would be allowed.

## LAND MANAGEMENT AREAS

### Developed Area

**Visitor Centers and Contact Stations.** Year-round operations would be maintained at the Rainy Lake visitor center. Facilities would be rehabilitated as funds allowed. Seasonal operations would continue at the Ash River and Kabetogama Lake visitor centers. Development plans for Ash River, Kabetogama Lake, and Kettle Falls Historic District would be revised (since they are outdated) and implemented.

**Parking.** The expansion of parking lots would be minimized in the park. Evaluations would be completed to see how to more effectively use existing parking lots at the Rainy Lake visitor center.

**Boat Launches.** Launches for shared motorized and nonmotorized use would be retained.

**Bicycle and Pedestrian Access.** Bicyclists and pedestrians would continue to use entrance roads to the Ash River and Rainy Lake visitor centers. No separate bike paths would be provided.

**Overnight Facilities.** No overnight facilities would be provided in developed areas (i.e., no group campsites near Kettle Falls or the visitor centers).

### Lakecountry Area

**Day and Overnight Use Sites.** A total of about 400 tent, houseboat, and day use sites (existing and new) would be planned for, as proposed in the 1988 *Lakecountry and Backcountry Site Management Plan* (see table 2). All new tent, day use, and houseboat sites would have to meet the developement criteria outlined in the 1988 plan. Visitors would be encouraged to observe the maximum party size for each type of site, ranging from 9 to 72 persons.

**Density of Use.** The following subareas would be designated for day and overnight use areas in the lakecountry area (the densities for each subarea would remain constant under all alternatives, but the number of sites would change by alternative, depending on the size of the subarea):

TABLE 2: TYPES AND CAPACITY OF DAY AND OVERNIGHT SITES, ALTERNATIVE 1

| | | |
|---|---|---|
| Tent Campsites | 221 small campsites (including 1 universally accessible site in each district)<br>36 large campsites | 9 people<br>18 people |
| Small Campgrounds | 3 campgrounds (5 sites each) | 45 people per campground |
| Group Campsites | 4 | 72 people |
| Houseboat Sites | 108 | 2 boats per site |
| Day Use Sites | 28 | No limit |

subarea 1 (high density: three or more sites within a ½-mile radius) — about 270 miles
subarea 2 (moderate density: fewer than three sites within a ½-mile radius) — about 145 miles
subarea 3 (low density: a maximum of one site per ½-mile radius) — about 240 miles

**Site Condition Assessment.** Occasional monitoring of developed sites would continue. As staffing and funding allowed, sites would be rehabilitated for continued use. If necessary, excessively damaged sites would be closed to avoid further resource impacts. Undeveloped sites would not be monitored or restored.

**Day Use.** Day use would continue to be allowed at developed tent and houseboat sites until 4 P.M. Day use with fires would be allowed at developed and undeveloped sites (in metal fire rings or previously established rock rings) unless the area was closed for resource protection or visitor safety.

**Overnight Use at Undeveloped Sites.** Overnight use at undeveloped sites by tent campers and houseboaters would continue to be allowed as long as users were 200 yards from a developed site and ¼ mile from a park developed area. However, if it was determined that such use was diminishing either resources or the visitor experience, then the use could be limited to developed sites.

**Fires and Firewood.** Fires would be allowed in metal fire rings or previously established rock rings, but the use of campstoves would be encouraged at undeveloped sites. Dead and down firewood could be gathered except where prohibited.

**Visitor Destination Sites.** A few interpretive facilities, services, or media would be developed for natural and cultural visitor destinations as funding allowed. Interpretive media would be provided at most historic structures on a project-by-project basis. The installation of interpretive media in restored or rehabilitated structures would be a top priority. Since funding for interpretive media development is extremely limited, little progress would be made on the backlog and new starts.

### Backcountry Trail Area

**Hiking, Skiing, and Snowshoeing Trails.** Current summer and winter trails for nonmotorized use would be retained. Summer hiking trails shown in the proposed *Wilderness Recommendation* would be constructed, as funding and staffing allowed.

**Hut-to-Hut Trail System.** No provisions would be made for developing a winter hut-to-hut system in the park.

### Primitive Area

**Camping.** Summer camping would continue to be allowed throughout the primitive area, with no limit on party sizes.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

### PARKWIDE MANAGEMENT

**Interpretive Programs.** Interpretive programs would focus on the park's significance, but ability to provide in-depth coverage of any given area or to respond to emerging critical issues would be limited by staffing and funding. No comprehensive interpretive plan would be developed to coordinate programs and projects into an integrated plan to relate them to the park's mission, purpose, and significance.

**Interpretive Publications and Projects.** The backlog of visitor orientation, information, and safety messages would be addressed as allowed by staffing and funding. The most critical issues of conflicts would be addressed first. Heavy dependence on funding for publications from partners would continue to limit available visitor information.

**Educational and Outreach Programs.** Park staff would continue to provide limited educational programs within the park and in neighboring communities. Educational programs would be based on park significance and related curricula. As staff time allowed, programs for different age levels and featuring a variety of subjects would be increased. Through occasional outside grants, new methods of outreach such as education trunks and Internet projects would be developed.

**Visitor Safety and Contact.** Limited visitor contact, resource protection, monitoring, and emergency services would be provided on the four major lakes. There would be no ranger presence in back-country or primitive areas. The park would depend heavily on established partnerships with area entities for support in emergency situations.

Existing visitor safety plans that address winter operations, buoy management, hazardous tree management, search and rescue, and emergency medical services with existing staff would continue to be implemented.

No coordination programs for interagency communication of visitor requests for emergency assistance would be developed. Limited outreach educational programs about safety would be provided.

**Concessions and Visitor Services.** The current level of concession services (boat tours, lodging, food service, and boat rentals) would continue, with no long-term consistency and stability in operation.

### WATER MANAGEMENT AREAS

#### Motorized Use Area

Interpretive programs and projects would continue to be oriented to water-based activities, with a large portion of the program dependent on tour boats as the venue. Programs that focus on the history of voyageurs would continue, but they would not necessarily focus on following their routes.

### LAND MANAGEMENT AREAS

#### Developed Area

Weekend seminars and other multi-age educational opportunities would continue as allowed by partnerships with outside entities. No overall umbrella educational institute would be developed in cooperation with others.

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

### PARKWIDE MANAGEMENT

Preventive maintenance would continue on a limited basis due to staffing and budget constraints.

**Staffing.** Park staffing levels would remain at less than an adequate number. Park staff would continue to rely on volunteers and volunteer organizations to provide visitor services, staff visitor centers, lead programs and activities, and conduct research on natural resources. Volunteers would also be critical for trail construction.

**Partnerships.** Established partnerships, including those for promotion, emergency response, education, trail construction/maintenance, resource management, and research, would be maintained.

Partnering with the Minnesota Department of Natural Resources for cooperative fishery and wildlife management would remain limited. The management of park lakes would continue to focus on sportfishing.

Current partnerships for tourism and promotion would be continued, with park involvement limited by staff time and legal constraints. Partnering with local school districts and Minnesota Technical Information Educational Services (TIES) would continue to provide access to educational programs at local, regional, and national levels. New starts of subject matter curriculum would be limited by staff time.

Current partnerships for the protection of cultural resources would be continued, and additional partnerships would be pursued for the preservation, protection, and use of cultural resources.

Park staff would continue working with other agencies for visitor safety and emergency response.

No partnering efforts would be pursued for additional campgrounds outside the park.

### LAND MANAGEMENT AREAS

#### Developed Area

**Operations and Maintenance Facilities.** Existing park operations and maintenance areas would be retained, with minimal expansion.

The development plan for Kettle Falls would be revised to include a workstation for park staff. Available specific area plans would be implemented. No additional operations would be provided at Crane Lake beyond current facilities.

**Park Housing.** Present park housing would be retained, and no new housing in the park would be constructed.

## ESTIMATED COSTS

This highly general cost estimate includes repair and rehabilitation, new construction, overnight and day use facilities, trails, removal of nonhistoric structures, studies and plans, programs, and staffing. The cost estimate for alternative 1 is $6,879,806, the least expensive of all the alternatives. (For more information see appendix D.)

52

# MODIFIED PROPOSED ACTION

The modified proposed action contains elements of alternatives 1, 2, and 3 and presents a balanced approach for resource protection and visitor use. This alternative is the National Park Service's preferred alternative, and it has been changed from the alternative presented in the *Draft General Management Plan / Environmental Impact Statement* in response to public comments. This alternative would seek to expand and intensify natural and cultural resource protection efforts through increased inventory and monitoring programs, partnerships, and research. The park would also continue to maintain and develop structures and facilities in order to protect resources and provide for public use.

This alternative responds to many public comments that stated that the current level of development and the variety of recreational experiences should not change significantly in the future. However, some changes are proposed in order to protect the variety and quality of recreational experiences. Integrated motorized and nonmotorized use would continue on the major lakes and designated interior lakes. The number of houseboats staying overnight in the park would be limited. A study would determine the feasibility of implementing user fees and an overnight permit system. There would be a moderate increase in the number of day and overnight sites (fewer than alternative 1 or 3, but slightly more than alternative 2). Sites would be located to emphasize a quiet and more dispersed experience.

Trail expansion would be focused on linking key park destinations and would support the development of a mainland trail system that connects communities so as to increase opportunities for visitors without boats. A new multi-agency visitor center would be developed to meet the needs of numerous entities near the eastern end of the park. Visitor center programs would be expanded to increase visitor contact and to ensure that visitor needs were met. Partnerships with surrounding entities would be strengthened with a focus on enhancing preservation in and around the park. Park operational facilities would be expanded at existing developed areas to meet the needs of the park yet disturb few resources.

## NATURAL RESOURCES

### PARKWIDE MANAGEMENT

Natural resources will continue to be protected in accordance with park plans and existing laws, regulations, and policies governing the National Park Service. For example, the park will continue to follow the 1916 NPS Organic Act (16 USC 1 et seq.), which states that the purpose of national parks "is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." The park will also continue to follow NPS *Management Policies*, which state that the park "will maintain as parts of the natural ecosystems of parks all native plants and animals" (2000, 4.4.1). Further, the National Park Service "will try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal communities" (NPS 2000, 4.1). Wetlands will continue to be protected by section 404 of the Clean Water Act (which requires permission from the U.S. Army Corps of Engineers to fill more than an incidental acreage of wetland), Executive Order 11990, and a "no net loss of wetlands" goal set by the Clinton administration in 1993. The National Park Service specifically avoids impacts to wetlands wherever possible.

Under the modified proposed action protection efforts would be expanded and intensified through research and management. Additional inventories of natural resources would be completed to provide accurate baseline data. Subsequently, a comprehensive inventory, monitoring, and research program would be developed, including a monitoring program to track resource impacts related to park use.

The ability of protection staff to provide adequate resource protection and to identify trends that need special emphasis would be increased.

Vacated, nonhistoric cabins would be removed, and the sites would be restored to natural conditions. Appropriate management of historic structures would be based on the revised "Historic Structures Management Plan" (NPS 1999e*)*. The sites of any removed historic cabins would be restored to natural conditions. However, the park would retain evidence of habitation in the form of chimneys or foundations or other important indicators of human habitation when buildings were removed unless there was a safety hazard or an unacceptable visual intrusion.

Park boundaries would be defined through surveys and posted so people would clearly know where NPS lands exist and so park staff could effectively manage the land.

Resource management plans would be revised as necessary or completed for resource management. visitor experience and resource protection, research, fisheries, water resources, vegetation, primitive area and proposed wilderness management, fire management, houseboat management, and land protection. For example, the 1988 *Lakecountry and Backcountry Site Management Plan* would be revised to reflect the actions in the approved general management plan.

### WETLANDS

As described for alternative 1, wetlands would be identified and delineated, and restoration would be considered for damaged or degraded wetlands; adverse impacts would be avoided or mitigated.

### THREATENED OR ENDANGERED SPECIES

As described for alternative 1, threatened or endangered wildlife species, or designated critical habitat for them, would be determined with the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources for areas that could be affected by construction, visitor use, or restoration activities. Any potential adverse impacts on listed, proposed, or candidate threatened or endangered species would be avoided, minimized, or otherwise mitigated. Formal consultation under section 7 of the Endangered Species Act would be initiated if an action might adversely affect such a species.

For all projects, surveys for federally listed, proposed, or candidate threatened or endangered plant species and other state rare or sensitive species would be conducted. More intensive surveys would be conducted if similar habitats were found in a project area. The intent would be to manage sensitive plant species at the population level that would ensure their survival within the park. Any sensitive plants discovered in project areas would be protected from human-caused disturbance, and the project would be redesigned to avoid direct impacts on plants and their specific habitat, if possible. Formal consultation would be initiated under section 7 of the Endangered Species Act if an action might adversely affect a listed or proposed species.

### FOREST MANAGEMENT

The management of southern transitional boreal forest stands that are critical to ecosystem restoration would be emphasized, while still ensuring that forests were managed in a manner that would contribute to visitor use and enjoyment. Steps would be developed in a vegetation management plan that would include efforts to shorten the time it normally takes a forest to reattain the characteristics and processes found in mature forests.

### FIRE MANAGEMENT

The park's *Wildland Fire Management Plan* would be revised to support a broader range of resource management objectives, including the restoration of fire in forests as a natural ecological process. Natural fire regimes would be reestablished to the greatest extent possible, without unduly reducing visitation or visitor enjoyment. Management objectives would be achieved through wildland fire use and prescribed fire.

## CULTURAL RESOURCES

### PARKWIDE MANAGEMENT

As described in alternative 1, park staff would continue to identify, evaluate, plan for, protect, and share information about all types of cultural resources. Current partnerships would be continued, and additional partnerships would be pursued.

The management of cultural resources would be more proactive than reactive, particularly through the development and implementation of treatment plans. Protection would occur through a formal monitoring program and with more concentrated public education efforts. With this alternative, preservation would be focused on the most significant resources, and a greater diversity of alternatives would be considered for other cultural resources.

### ETHNOGRAPHIC RESOURCES

The management of ethnographic resources would be the same as alternative 1. Because Native Americans have important cultural connections with the park, documentation of historic and contemporary uses of resources would continue; park staff would seek greater involvement with Native Americans in planning, resource management, and interpretation; and cultural resources associated with the history of Native Americans in the park would be protected. The park would work with area Native American bands to determine appropriate methods of treatment and interpretation of ethnographic resources.

### CULTURAL LANDSCAPES

Cultural landscapes are defined by the National Park Service in the *Cultural Landscapes Inventory Professional Procedures Guide* as "special places — expressions of human manipulation and adaptation of the land. . . . Cultural landscapes are intertwined patterns of things both natural and constructed — plants and fences, watercourses, and buildings." As in alternative 1, all eligible cultural landscapes in the park would be documented; Ellsworth Rock Garden would continue to be restored (as directed in the 1998 "Preservation Treatment Plan"); the park would retain evidence of habitation when buildings were removed, except in specific cases; and landscape features (such as earthen embankments) would be protected at selected historic archeological sites.

In addition to actions described in alternative 1, treatment recommendations for landscapes at Ash River would be implemented. Cultural landscape reports and site development plans for the management of landscapes at visitor destinations would be completed. Recommendations in the *Historic Waterway Study* would be implemented to protect and interpret significant features along the fur trade route. Ruins would be actively managed through vegetation control to slow their decline.

### ARCHEOLOGICAL RESOURCES

As in alternative 1, the integrity of intact archeological sites, as identified in the *Cultural Resources Management Plan* and future inventories, would be maintained. The park would also continue to inventory and evaluate archeological resources, as directed in the *Cultural Resources Management Plan*. A treatment plan for archeological resources would be completed. Efforts would be made to prevent further damage to the most significant sites threatened by erosion.

As in alternative 1, damage to aboveground resources would be prevented through vegetation management. Impacts to archeological resources would be minimized by avoiding them or hardening the surface. For example, one method to protect archeological resources through hardening the surface is to formally develop a tent site with the addition of fill material for tent pads, or picnic table pads, or directing traffic away from resources by developing formal trails or controlling vegetation.

### HISTORIC PROPERTIES AND STRUCTURES

The 1990 *Historic Structures Management Plan* is being revised (NPS 1999e). The revision proposes using criteria such as significance, integrity, condition, public interest, ability for the park to maintain, potential for reuse or continuing use, political considerations, interpretive potential, and other factors that might be appropriate to guide treatment decisions. Under the proposed action an estimated 16–20 properties with multiple structures would be preserved. This represents 53% to 67% of the park's historic properties eligible for the National Register of Historic Properties. Specific details and decisions concerning the treatment of historic properties would be made in the revised plan. Properties awaiting treatment decisions would be stabilized and protected pending decisions on treatment. As in alternative 1, the use of historic properties for park operations and interpretation would be continued.

### COLLECTIONS

As described in alternative 1, objects, specimens, and records representative of the park's natural, cultural, and administrative history would continue to be collected, recorded, and safely housed. In addition, the collection would be regularly maintained and would receive conservation treatment as needed. Greater access to the collections would be provided primarily through media methods such as the Internet, publications, and exhibits.

### PUBLIC ACCESS

Public access would be encouraged to a broader range of cultural resources, representing all periods of the park's history. Destination sites would be selected on the ability of resources to withstand increased use, the cultural theme represented, and the connection to compelling interpretive stories. The level of development would be commensurate with the goals for the management area it is located in. All other cultural resources would be protected.

## VISITOR USE AND FACILITIES

### PARKWIDE MANAGEMENT

**Overnight Permit System.** A no-fee, self-registration permit system for overnight summer and winter use would be implemented no sooner than 2002 (use and occupancy residents and private landowners would be exempted). The no-fee, self-registration permit system would be structured to make it easy for visitors to obtain permits and would not direct visitors to specific overnight sites. All overnight users at both developed and undeveloped sites (including overnight in-water anchoring) would be required to obtain these permits. The purpose of the permit system would be to gather information on the use of sites and to educate visitors about park conditions, activities, and rules. A feasibility study would be completed by 2005 (or within three years of the approval of this general management plan), assuming adequate funding and staffing were available, to address such issues as fees, permit distribution, regulations, and system management. The study would be developed with public input and would establish the most appropriate overnight permit system that should be used by the park. If feasible recommendations could be found, the National Park Service would begin implementing a permit system as soon as approved.

No-fee overnight group permits for tent camping groups with more than 18 people would be implemented no sooner than 2002. This permit system would allow park staff to contact large groups, educate them about party size limits for different sites, encourage visitors to split into smaller groups, and gather information on the use of the park. No sooner than 2002 a no-fee permit system would also be required for visitors travelling together with more than two houseboats. Once the overnight permit system feasibility study (described above) was approved, any recommendations relating to groups would be implemented.

**Facility Use Fees.** The feasibility study for the overnight permit system would also examine the feasibility of implementing a fee system to use certain park facilities, such as campsites and parking areas. The study would be completed by 2005 (or within three years after the general management plan was approved), if funding and staff were available. Recommended actions would be developed with public input. Entry fees for day use are not proposed and would not be implemented. The National Park Service would begin implementing the approved facility use fee recommendations soon after approval of the feasibility study.

**Visitor Experience and Resource Monitoring.** Park staff would establish a monitoring system to understand seasonal visitor use patterns, visitor needs and experience, resource impacts of day and overnight use, restoration needs, and other impacts. The information from the no-fee permit system and from the overnight permit feasibility study would be used as part of the monitoring program. Indicators and standards for monitoring key park resource conditions and visitor experiences during the summer and winter would be established. Visitor use and trends data would be gathered to provide information for the preservation of resources, the establishment of appropriate carrying capacities, the protection of the quality of the visitor experience, and assurances that facility development would match needs. The development of visitor facilities would be based on a strategy plan using a method such as the National Park Service's Visitor Experience and Resource Protection (VERP) methodology or a similar system that identifies current and potential visitor use patterns and demands, desired visitor experiences, and resource conditions.

## WATER MANAGEMENT AREAS

### Integrated Use Area (Motorized and Nonmotorized Uses)

**Integrated Use.** As described for alternative 1, year-round nonmotorized and motorized uses (including appropriate watercraft, private fixed-wing aircraft, and snowmobiles) would continue on the park's four major lakes and on the seven designated interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda).

To minimize conflicts between motorized and nonmotorized boat users on the major lakes, brochures and outreach programs would be developed that focus on boating etiquette. Publications would also be

57

developed on suggested paddle routes within the integrated use areas of the park. The publications would clarify that motorized uses are allowed along suggested paddle routes.

**Overnight Houseboat Use.** Under the modified proposed action a houseboat management plan would be developed with public input as a high priority and would be completed by 2005, if funding and staff were available. The plan would study a range of topics related to houseboats such as commercial and private houseboat use, graywater management, users' needs and desires, and the appropriate number of houseboats that should be permitted in the park at any one time. The findings from studies done for the houseboat management plan would be used to determine the limit on the number of overnight houseboats.

While the houseboat management plan was being developed, an interim limit would be established that would permit 60 houseboats per basin to remain in the park overnight, or a park total of 120 overnight houseboats. This interim limit would be implemented in 2002 through the use of a free overnight houseboat permit system. A monitoring system would be established to gather data on houseboat use.

Because many visitors desire a balance between houseboat and tent overnight use in the park, creel survey data from 1986 to 2000 were used to generate a viable and defensible interim limit. Other information that helped guide the interim number of houseboats was the knowledge that the park was established to protect its outstanding scenery. Park managers have received complaints about the number of houseboats in the park when the peak use was only in the 30s for each basin in 1999. The visual dominance of increased numbers of houseboats conflicts with the park's purpose to protect the scenery. Also, NPS regulations state that overnight visits in the park are limited to 30 calendar days per year.

Houseboat use has increased significantly over the last five years, with an 87% increase in the Rainy Lake Basin since 1996 (data for the Namakan Basin were only collected for 1998 and 1999, and a peak of 36 houseboats was counted each of these years). Creel data for houseboats at peak times in 1999 show 34 houseboats in the Rainy District and 36 houseboats in the Namakan District. Based on the creel data, if houseboat use continued at the current rate to 2015 there would be 150 houseboats in the Rainy Lake District and 56 in the Namakan District during peak times (see Rainy and Namakan Basin projected use charts on page 170). These projections indicate that houseboat use would need to be managed if the park was going to balance houseboat and other types of overnight use. An interim limit of 60 overnight permits per basin would ensure that the current level of houseboat use in the park would be accommodated at least until 2005, and it would allow for houseboat numbers to grow based on the current peak rate.

No limited concession contracts with commercial houseboat companies would be established.

Sanitation system compliance certificates for blackwater containment would be required for all houseboats in park waters.

**Fixed-Wing Aircraft.** As described for alternative 1, commercial fixed-wing aircraft shuttles — one to Shoepack Lake and possibly one between the International Falls airport and the Kettle Falls Hotel — would continue. Private fixed-wing aircraft use would continue on the four major lakes and the seven designated interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda).

If the Federal Aviation Administration notified the National Park Service that a commercial enterprise had applied for approval to give air tours over the park, an air tour management plan would need to be developed before any such use could be approved. The air tour management plan would address such subjects as flights into, out of, within, and over Voyageurs National Park.

**Boats on Interior Lakes.** The park would continue to provide nonmotorized boats on some interior lakes, but user fees would be charged. Fees would go into effect no sooner than the summer of 2002.

**Snowmobile Trails and Safety Portages / Vehicular Access.** To make snowmobiling safer, the Moose Bay snowmobile portage would be replaced with a portage at Ranta Bay. However, if this option was not viable due to agreements that must be made with private landowners, or if the Ranta Bay trail had to be closed in the future for unforeseen reasons, the Moose Bay portage would be reopened. Snowmobile clubs would develop and maintain that section of the Ranta Bay trail/portage outside the park.

The Mukooda Lake snowmobile portage would be rerouted along the winter truck route. The portage would be redesigned to make it safer for motorized users and to minimize impacts to cultural resources. Only trucks with a permit would be allowed to use the truck route. Truck permits would be issued later in the winter after the main snowmobile season. The permits would be only for non-recreational use. Permits would be required no sooner than the winter of 2001–2.

**Special Use Zone.** The special use zone would be continued, and special events — such as sports, pageants, regattas, public spectator attractions, entertainment, ceremonies, and encampments — would be permitted by the superintendent when (1) there was a meaningful association between the park area and the event, and (2) the event would contribute to visitor understanding of the significance of the park area. However, a permit must be denied if the event would

- impair park resources
- create an unsafe or unhealthful environment for other visitors or employees
- be contrary to the purposes for which the park was established
- or unreasonably interfere with the atmosphere of peace and tranquillity, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park; NPS interpretive, visitor service, administrative, or other activities; NPS concessioner or contractor operations or services; or other existing, appropriate park uses

The superintendent must ensure that appropriate permit conditions are imposed for special events.

Snowmobile radar runs would not be permitted in the special use zone.

The Park Service would not permit the public staging of special events that are conducted primarily for the material or financial benefit of organizers or participants; or would be commercial in nature; or that would demand in-park advertising or publicity; or for which a separate public admission fee would be charged. However, park buildings or specially designated locations that are suitable and appropriate might be made available for private, "by-invitation-only" events. Admission fees for, or any other monies associated with, the by-invitation-only event, could not be collected by the permittee on park premises. Large-scale events would be managed utilizing the National Incident Management System (NIMS).

### No-Wake Water Area

No areas for no-wake boating would be established.

### Nonmotorized Use Area

As described for alternative 1, integrated motorized and nonmotorized summer and winter use would continue to be allowed on Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda Lakes. Only nonmotorized uses would be allowed on all other interior lakes.

## LAND MANAGEMENT AREAS

### Developed Area

**Visitor Centers.** Year-round operations would be continued at the Rainy Lake visitor center. At the Ash River and Kabetogama Lake visitor centers, hours and seasons of operation would be expanded or maintained, based on demand. At Crane Lake the National Park Service would cooperate with other agencies in developing a multi-agency year-round visitor center, whose hours and seasons of operation would be determined by demand.

The expansion of visitor centers would be minimized, and all existing centers, along with the Kettle Falls facility, would be maintained. Outdoor exhibits and seasonal facilities would be developed, but the intent would be to minimize disturbance to resources while providing greater visitor interpretation. Visitor facilities would be sustainable and durable.

**Parking.** As described for alternative 1, the expansion of parking lots would be minimized in the park. Park staff would work with partners to provide additional parking and shuttle services outside the park. At the Rainy Lake visitor center parking issues such as short- and long-term parking, and the need for an overflow lot would be addressed.

**Boat Launches.** Launch areas for nonmotorized users would be developed at all visitor centers.

**Bicycle and Pedestrian Access.** Bike lanes or separate paths would be developed along entrance roads to the park's visitor centers. Park staff would pursue the development of trail connections or linkages to existing lanes/paths outside the park. An additional shoulder would be needed in some areas to provide for safe routes.

The National Park Service would work with partners to connect the bicycle trail portions of the Kabetogama–Ash River trail system to area bike paths.

**Overnight Facilities.** As described for alternative 1, no tent or houseboat sites would be provided in developed areas where there is high visitor traffic (i.e., no group tent sites at visitor centers or within the Kettle Falls Historic District).

### Lakecountry Area

**Day and Overnight Use Sites.** In order to provide a less crowded and more secluded camping experience for many visitors, fewer developed sites would be provided than those proposed in the 1988 *Lakecountry and Backcountry Site Management Plan.* Between 280 and 320 developed sites would be planned for (including existing and new sites), compared to about 400 sites under alternative 1. To determine the number of developed sites, a monitoring system would be established to collect data regarding the visitor experience (crowdedness, site locations, distances between sites, etc.) and needs, and the *Lakecountry and Backcountry Site Management Plan* would be revised. All new tent, day use, and houseboat sites would have to meet the site selection criteria outlined in the *Lakecountry and Backcountry Site Management Plan* (e.g., latrine potential, island size, and no critical resource conflicts). The site selection criteria in the *Lakecountry and Backcountry Site Management Plan*

60

would continue to be used. Proposed sites in that plan that would not be developed include those that did not meet the site selection criteria or those that would create a higher density than that established for lakecountry subareas under this alternative. Sites that were not identified in the *Lakecountry and Backcountry Site Management Plan* could be developed if they met the site selection and subarea density criteria. Compared to alternative 1, most of the lakecountry area site development would be moderate or low density (see "Density of Use" below). Day use and overnight sites would be developed as allowed by funding. Generally 5–10 sites per year would be built.

The highest priority would be to develop day use sites. These sites would include standard day use sites, while others would be visitor destinations, defined as special interpreted natural and cultural resource destination areas. Visitor destinations would have some degree of facilities.

To preserve the quality of the experience for visitors and to manage resource disturbance, the maximum party size at individual tent sites in the lakecountry would be 9 people at small sites and 18 people at large sites, with a maximum of 30 people at group sites (see table 3). To provide for houseboat groups that desire to be together, houseboat sites could accommodate up to two houseboats per site with 12 people maximum per boat. Use limits would be strictly enforced.

TABLE 3: TYPES AND CAPACITY OF DAY AND OVERNIGHT SITES, MODIFIED PROPOSED ACTION

| | | |
|---|---|---|
| Tent campsites | 129 small sites (including 1 universally accessible site in each district)<br>24 large sites | 9 people<br>18 people |
| Small campgrounds | 2 campgrounds (5 sites each) | 45 people per campground |
| Group campsites | 3 — 2 Namakan/1 Rainy | 30 people |
| Houseboat sites | 106 | 2 boats per site/12 people per boat |
| Day use sites | 28 (including 1 universally accessible site in each district) | 2 groups with 9 people each (tour boat excepted) |
| Visitor destination day use sites (interpreted sites) | 15–20 | Determined by resource sensitivity and subarea density |

**Density of Use.** As described on page I-38, the lakecountry area would be divided into three subareas. The subareas would range from high to low density and would define the number of day and overnight sites within a 1/2-mile radius. The subareas were generated based on existing density of use, natural and cultural resource conditions, relationship to development, and the desire to provide areas with a range of densities. Most of the lakecountry shoreline would be designated as moderate density. The amount of each subarea within the lakecountry area would be as follows:

subarea 1 (high density: three or more sites within a 1/2-mile radius) — about 130 miles
subarea 2 (moderate density: fewer than three sites within a 1/2-mile radius) — about 280 miles
subarea 3 (low density: a maximum of one site per 1/2-mile radius) — about 240 miles

**Site Condition Assessment.** Pre-park campsites would be examined to ensure that they met the criteria in the 1988 *Lakecountry and Backcountry Site Management Plan* as well as the new subarea densities. Sites that did not meet the criteria or densities would be restored to reverse resource damage, rehabilitated with proper facilities, or closed if necessary. If as a result of the comprehensive monitoring system the use of undeveloped sites was discontinued, then excessively damaged sites would be restored to natural conditions (see "Overnight Use at Undeveloped Sites" below).

**Day Use.** Day use would be allowed at developed tent sites until 2 P.M. Day use would not be allowed at houseboat sites since these sites are not equipped with vault toilets. Day use, with visitors being able to have fires, would only be permitted at developed sites. Day use without fires would be allowed at

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undeveloped sites unless an area was closed for resource protection or visitor safety. The day use of developed tent sites would be considered in the overnight permit system feasibility study.

**Overnight Use at Undeveloped Sites.** As described for alternative 1, the use of undeveloped sites by tent campers and houseboaters would continue to be allowed as long as they were 200 yards from a developed site and 1/4 mile from a park developed area. However, under the modified proposed action visitors would be encouraged to use developed sites whenever possible so as to reduce resource impacts.

Under the modified proposed action a monitoring study would be conducted in conjunction with the no-fee overnight permit system for three years following the approval of the general management plan, assuming adequate funding and staffing were available. This study would determine if the use of undeveloped sites was causing unacceptable resource damage (e.g., sanitation problems, vegetation tramping, or out-of-control fires). The monitoring study would separately evaluate the Rainy and Namakan basins, as well as tent campers and houseboaters. If the monitoring study found that overnight use at undeveloped sites caused negative impacts, then that use would be phased out or other strategies would be implemented.

**Fires and Firewood.** Open fires would only be allowed in metal fire rings at developed sites starting in the summer of 2006. In 2005 the use of liquid fuel camp stoves would be required for day or overnight use at undeveloped sites.

As described for alternative 1, dead and down firewood could be gathered except where prohibited. Visitors would be encouraged to bring their own firewood or buy it from local vendors.

**Visitor Destination Sites.** Visitors and the park's gateway communities have requested a greater range of opportunities for the public to explore and learn about the park's significant cultural and natural resources. To provide a range of experiences at sites that best exemplify the park's natural and cultural significance, to promote visitor understanding and appreciation of the park, and to provide visitor attractions, between 15 and 20 sites would be developed as visitor destinations. These sites would provide interpretation and picnic facilities at remote and dispersed locations throughout the park that would meet park visitor desires for active independent exploration. Implementation plans that address facilities and interpretive media would be developed for each visitor destination, and sites would be carefully monitored to ensure that features were appropriately managed. Facilities and interpretation would be tailored to each site and would be planned at a level that was appropriate and sustainable for that destination's use.

### Backcountry Trail Area

**Hiking, Skiing, and Snowshoeing Trails.** As described for alternative 1, existing summer and winter trails for nonmotorized uses would be retained. The following summer hiking trails, which were shown in the 1992 *Wilderness Recommendation*, would be constructed:

Kettle Falls to Beast Lake on the Kabetogama Peninsula
Jorgens Lake to Little Shoepack Lake on the Kabetogama Peninsula
Loop trail near Lost Bay on Kabetogama Lake
Mukooda Lake to King Williams Narrows near Sand Point Lake
Dryweed Island (Rainy Lake) loop trail

In cooperation with partners, a mainland Kabetogama to Ash River trail system would be developed for nonmotorized, summer and winter use. This trail would be inside and outside the park.

The feasibility of extending the Kabetogama–Ash River trail to Crane Lake would be studied in cooperation with partners. If the extension proved feasible, it would be developed and maintained as a cooperative effort.

In addition, short interpretive trails at some visitor destination sites (geared either to cultural or natural resources) would be provided.

**Hut-to-Hut System.** As described for alternative 1, no provisions would be made for developing a winter hut-to-hut system in the park.

### Primitive Area

**Camping.** Camping would be permitted throughout the park's primitive areas, with a maximum of six people per party. Starting in 2002, primitive area campers would be required to get a camping permit from a ranger. No open fires would be allowed, and campers would be expected to follow leave-no-trace practices.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

### PARKWIDE MANAGEMENT

**Interpretive Programs.** The emphasis on visitor information, orientation, and interpretive services would increase; additional staffing would be sought to implement these programs, as well as potential reservation systems. To ensure that visitors had ample opportunities to learn about and appreciate the park's significance, a comprehensive interpretive plan would be developed to guide the expansion of programs and the development of exhibits, displays, publications, and other educational tools. Interpretation would focus on themes based on the park's mission, purpose, and significance to a depth not possible with current staffing levels. Interpretive programs and projects would provide a timely response to critical resource and visitor use issues.

**Interpretive Publications and Projects.** The backlog of visitor orientation, information, and safety messages would be addressed through increased staffing and funding of publications. For example, new information might include interpretive signs at historic sites and informational brochures.

**Educational and Outreach Programs.** Educational programs would be expanded to cover a greater diversity of subjects and for diverse age groups. Educational opportunities within the park, which are currently limited, would be expanded by developing new curricula beyond the present environmental education boat trips. Educational opportunities would primarily be expanded by using new communication technologies that could be used in classrooms outside the local area.

**Visitor Safety and Contact.** Staffing would be added to expand visitor contact, resource protection, and emergency response capabilities. Backcountry monitoring of visitor use and resources would be limited, while rangers would be available in the lakecountry, and especially on the four major lakes, to assist visitors and monitor resources. Safety enforcement activities, such as boating safety, snowmobile speed limits, and incidental business permit compliance, would be increased. Existing visitor safety plans would be reevaluated and needs determined. The plans would be implemented consistently on an annual basis. Visitor contact and interpretive programs that provide safety education to visitors would be increased.

Staffing levels identified in the 1995 *Law Enforcement Needs Assessment* would be pursued so as to be capable of responding to visitor emergencies in a timely manner. However, the level of response would depend on the visitor experience chosen; for example, visitors in primitive areas would be expected to be more self-reliant than visitors in lakecountry areas. Emergency communications with the proper service providers would be improved by using up-to-date notification systems, increasing monitoring, and better coordinating activities between agencies.

**Concessions and Visitor Services.** As described for alternative 1, the current level of concession services (boat tours, lodging, food service, and boat rentals) would continue. Methods would be sought to increase the economic viability of these operations, thus making them more stable. Additional services (such as providing tour boats from other locations, and water taxi service) could be considered.

### WATER MANAGEMENT AREAS

#### Motorized Use Area

Interpretive programs would be expanded to include maps, brochures, and other materials from a water-based perspective to show visitors the historic voyageurs' routes, geologic resources, wildlife, and other historic uses of these waterways.

### LAND MANAGEMENT AREAS

#### Developed Area

In partnership with other entities, an institute for diversified educational opportunities would be developed. The educational institute could help supplement the park's interpretive programs and provide special classes, programs, and research to expand learning opportunities based on the park's mission, purpose, and significance. The institute could be held in a number of different places in order to reach a wider audience.

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

### PARKWIDE MANAGEMENT

**Maintenance Program.** A comprehensive preventive maintenance program would be developed and implemented to ensure that park facilities and historic structures were properly maintained.

**Staffing.** Staffing would be increased as funding allowed. The focus for having additional personnel would be resource preservation, visitor services, visitor and employee safety, and partnerships.

**Volunteers.** Voyageurs National Park would reduce reliance on volunteers for base operations. Volunteers would be used to supplement operations and staffing.

**Partnerships.** Relationships with surrounding public land, visitor protection, and recreation agencies would be strengthened. The purpose would be to enhance preservation within the park, to assist neighboring communities with resource issues, to provide a more cohesive approach to economic development, to support community recreational goals outside the park, and to provide facilities for visitors that are needed but might be inappropriate or unfeasible in the park (for example, an RV campground, a multi-agency visitor center at Crane Lake, or regional trail linkages). Partnerships with surrounding private landowners and communities would also be strengthened as a means to help provide needed visitor services, park-related education, and resource protection (e.g., septic regulations, water quality).

64

The National Park Service would work more closely with the Minnesota Department of Natural Resources (MDNR), the U.S. Forest Service, the Ontario Ministry of Natural Resources, and other agencies to develop cooperative ecosystem approaches to both fisheries and wildlife management. Efforts would be made to restore native fish and wildlife populations through unified management programs. A fisheries management plan would be developed in cooperation with the Department of Natural Resources. The plan would focus on managing sportfishing and developing strategies that emphasize the maintenance and reestablishment of native, self-sustaining fish populations. The Department of Natural Resources would continue to be the lead agency for fisheries management.

Partnerships with educational, institutional, or private entities would be actively pursued to ensure the preservation and maintenance of cultural resources in the park. Cooperating agencies that provide visitor safety services in conjunction with the National Park Service would be actively supported. Park staff would continue to pursue and maintain general agreements with the Coast Guard, First Responders, local sheriffs, and the Minnesota Department of Natural Resources to help meet visitor needs.

### LAND MANAGEMENT AREAS

#### Developed Area

**Operations and Maintenance Facilities.** Park operations and maintenance facilities would continue in the Rainy District, the same as in alternative 1. However, should office and storage space needs exceed capacity at park headquarters, a new facility may need to be found. Also, as in alternative 1, the development plan for Kettle Falls would be revised to include a workstation for park staff.

Under this alternative a development plan would be prepared for Namakan District operations. The Ash River operations area would remain a maintenance hub. Under this alternative the area near the building site would be used to provide facilities for maintenance, fire management, and limited field facilities for resource management. Development would be confined to already disturbed areas to the extent possible.

Office space for ranger operations, interpretation, and other uses would be expanded in the Kabetogama Ranger Station Historic District area once the majority of the maintenance operations in this area were moved to the Ash River operations area. Maintenance staff would maintain a presence at Kabetogama, and the marina at Kabetogama would serve as the main boat harbor for park operations.

At Crane Lake a satellite operations and maintenance facility would be provided in conjunction with the new multi-agency visitor center.

**Park Housing.** Existing housing for NPS employees would be retained, but no new housing would be constructed in the park (the same as alternative 1).

The National Park Service would pursue partnerships with businesses and organizations outside the park to provide seasonal housing for both park and private resort employees.

## ESTIMATED COSTS

This highly general cost estimate includes repair and rehabilitation, new construction, camping facilities, trails, removal of vacated cabins, studies and plans, programs, and staffing. The cost estimate for the modified proposed action is $9,935,415, the second least expensive of the alternatives.

# ALTERNATIVE 2: RESOURCE PROTECTION, PARTNERSHIPS, BALANCED USES

Alternative 2 emphasizes resource protection and partnerships focused on natural and cultural resource preservation and visitor services. Resource protection would be improved through increased monitoring and research programs, requiring the use of developed sites, and increased visitor education through contacts related to an entry/user fee system and an overnight permit/reservation system.

This alternative would provide the most opportunities for visitors to experience solitude, natural quiet, and a natural setting by designating no-wake areas in some shallow bays on the major lakes, by removing summer motorized use from all interior lakes on the Kabetogama Peninsula, by providing the fewest developed overnight and day use sites, and by developing a single new trail on the mainland. This alternative would seek to keep all visitor centers open year-round and to provide greater visitor contact and more interpretive programs and educational opportunities. Visitors would be able to reserve a developed overnight site through a permit/reservation system. A multi-agency visitor center in the Crane Lake area would be developed, park research expanded, and partnerships strengthened.

## NATURAL RESOURCES

### PARKWIDE MANAGEMENT

As described for the modified proposed action, natural resources would continue to be protected in accordance with current plans and NPS policies, but protection efforts would be expanded and intensified through research and management. Inventories of natural resources would be completed, and a comprehensive inventory, monitoring, and research program would be developed, including monitoring of resource impacts related to park use. The ability of protection staff to intervene in violations and to identify trends that need special emphasis would be increased.

Also as described for the modified proposed action, vacated, nonhistoric cabins would be removed, with the sites restored to natural conditions, and park boundaries would be defined through surveys and posted.

Resource management plans would be revised as necessary or completed (resource management, visitor experience and resource protection, research, fisheries, water resources, vegetation, primitive area and proposed wilderness management, disturbed land restoration, trails, inventory and monitoring, fire management, lakecountry and backcountry site management, and land protection).

### WETLANDS

Wetlands would be identified and delineated, as described for the modified proposed action, and restoration would be considered for damaged or degraded wetlands; adverse impacts would be avoided or mitigated.

### THREATENED OR ENDANGERED SPECIES

As described for the modified proposed action, threatened or endangered wildlife species, or designated critical habitat for them, would be determined with the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources for areas that could be affected by construction, visitor use, or restoration activities. Any potential adverse impacts on listed, proposed, or candidate threatened or endangered species would be avoided, minimized, or otherwise mitigated. Formal consultation under section 7 of the Endangered Species Act would be initiated if an action might adversely affect such a species.

For all projects, surveys for federally listed, proposed, or candidate threatened or endangered plant species and other state rare or sensitive species would be conducted. More intensive surveys would be conducted if similar habitats were found in a project area. The intent would be to manage sensitive plant species at the population level that would ensure its survival within the park. Any sensitive plants discovered in project areas would be protected from human-caused disturbance, and the project would be redesigned to avoid direct impacts on plants and their specific habitat, if possible. Formal consultation would be initiated under section 7 of the Endangered Species Act if an action might adversely affect a listed or proposed species.

### Forest Management

Under alternative 2 the management of southern transitional boreal forests that are critical to ecosystem restoration would be emphasized, but different from the modified proposed action, decisions would be based more heavily on enhancing forest conditions not on benefiting visitor use and enjoyment. As in the modified proposed action, the park would develop steps to shorten the time for forests to reattain the characteristics and processes found in mature forests.

### Fire Management

Natural fire regimes would be reestablished to the greatest extent possible through wildland fire use and prescribed fire, even if it caused temporary inconveniences to visitors or a temporary reduction in visitor enjoyment.

## CULTURAL RESOURCES

### Parkwide Management

As described in alternative 1, park staff would continue to identify, evaluate, preserve, protect, and share information about all types of cultural resources; current partnerships would be continued, and additional partnerships would be pursued. Cultural resource management under alternative 2 would focus more on research and on the preservation of resources than on making sites accessible to the public.

As in the modified proposed action, cultural resources would be protected through a formal monitoring and protection program and greater public education efforts.

### Ethnographic Resources

Actions related to ethnographic resources would be the same as those described in alternative 1 and the modified proposed action. Native Americans have important cultural connections with the park, and programs with Native Americans to document their use of resources in the park would be continued. Park staff would seek greater involvement with Native Americans in the research, planning, management, and interpretation of ethnographic resources. Native American sites would be protected. The park would work with area Native American bands to determine appropriate methods for the treatment and interpretation of ethnographic resources.

## CULTURAL LANDSCAPES

The management of the Ellsworth Rock Garden would focus on the preservation and protection of existing features rather than restoration. The park would retain evidence of habitation when buildings were removed, except in specific cases; and landscape features (such as earthen embankments) would be protected at all historic archeological sites with integrity.

As described for the modified proposed action, treatment recommendations for landscapes at Ash River would be implemented. Treatment plans would be developed and implemented for other potential cultural landscapes in the park such as Hoist Bay, Rainy Lake City, and the Kabetogama Ranger Station Historic District. Recommendations in the historic waterway study would be undertaken. Ruins would be actively managed through vegetation control to slow their decline.

## ARCHEOLOGICAL RESOURCES

A greater emphasis would be placed on research as opposed to the inventory and evaluation of resources in developed areas. All sites would be monitored and protected, and more aggressive steps would be taken to stabilize all intact sites threatened with erosion. A vegetation management program would be implemented to preserve aboveground resources at historic archeological sites.

## HISTORIC PROPERTIES AND STRUCTURES

Under this alternative more physical evidence representative of the long period of human relationship with the environment would be preserved than under the other alternatives. This would result in the preservation of as many historic properties as possible (a minimum of 21 properties with multiple structures or more than 70% of the park's properties eligible for the National Register of Historic Places). A greater variety of partnerships and alternatives for uses would be considered. Properties awaiting treatment would be stabilized and protected until funding became available for treatment.

As in alternative 1, the use of historic properties for park operations and interpretation would continue.

## COLLECTIONS

As described for the modified proposed action, objects, specimens, and records would continue to be collected, recorded, and safely housed. The collection would be regularly maintained and receive conservation treatment, and greater access to the collections would be provided.

## PUBLIC ACCESS

As described for the modified proposed action, public access to a broader range of cultural resources would be encouraged, with destination sites selected on the ability of resources to withstand increased use, the cultural theme represented, and the connection to compelling interpretive stories. The level of development would be commensurate with the goals for the management area it is located in, and all other cultural resources would be protected.

## VISITOR USE AND FACILITIES

### PARKWIDE MANAGEMENT

**Overnight Permit System.** A reservation system with fees would be implemented for all overnight use, and all tent and houseboat sites would require reservations.

**Entry/User Fees.** Under alternative 2 user fees, such as an annual pass, day pass, or parking fee, would be instituted. Based on the current NPS fee-demonstration program, Voyageurs National Park would retain 80% of collected fees for operations.

**Visitor Experience and Resource Monitoring.** As described for the modified proposed action, park staff would establish a summer/winter use and resource monitoring system, including indicators and standards for key park resource conditions and visitor experiences.

### WATER MANAGEMENT AREAS

**Integrated Use Area (Motorized and Nonmotorized Uses)**

**Integrated Use.** As described for alternative 1 and the modified proposed action, year-round motorized uses (watercraft, private fixed-wing aircraft, and snowmobiles) and nonmotorized uses would continue to be allowed on the park's four major lakes. However, under this alternative motorized use on interior lakes during the summer would only be allowed on Mukooda Lake. During the winter motorized uses would continue to be allowed on the Chain of Lakes trail and Mukooda Lake, as well as the major lake surfaces.

**Overnight Houseboat Use.** Through a permit system a total of 50 overnight houseboats per basin would be allowed — 40 commercial houseboats and 10 private houseboats, for a park total of 100.

Limited concessions contracts would be established with the four existing commercial houseboat companies. Sanitation compliance certificates for blackwater containment would be required for all houseboats in park waters (the same as the modified proposed action).

**Fixed-Wing Aircraft.** Commercial fixed-wing aircraft use would be discontinued in the park. Private fixed-wing aircraft use would continue on the park's four major lakes, but it would be prohibited on all interior lakes except Mukooda.

**Boats on Interior Lakes.** To further protect resources, the National Park Service would not provide boats on interior lakes.

**Snowmobile Trails and Safety Portages / Vehicular Access.** As described for the modified proposed action, the Moose Bay snowmobile portage would be replaced with a portage at Ranta Bay. However, if this option was not viable for unseen reasons or if the Ranta Bay trail had to be closed in the future, the Moose Bay portage would be reopened. Snowmobile clubs would develop and maintain the section of the Ranta Bay trail/portage that is outside of the park.

Also as described for the modified proposed action, the Mukooda snowmobile portage would be rerouted along the winter truck route. The portage would be redesigned to make it safer for motorized users and to minimize impacts to cultural resources. Only trucks with nonrecreational use permits would be allowed to use the truck route; permits would be required no sooner than winter 2001–2.

**Special Use Zone.** The special use zone described in alternative 1 would be discontinued.

### No-Wake Water Areas

Under this alternative no-wake boating areas, both nonmotorized and motorized, would be designated in specific bays on the four major lakes to provide a quieter, more natural experience.

### Nonmotorized Use Area

**Interior Lakes.** During the summer all interior lakes except Mukooda would be designated as nonmotorized use areas. During the winter all interior lakes except the Chain of Lakes trail and Mukooda Lake would be designated as nonmotorized use areas.

## LAND MANAGEMENT AREAS

### Developed Area

**Visitor Centers.** Year-round operations would be provided at all visitor centers (Rainy Lake, Ash River, and Kabetogama Lake). A year-round, multi-agency visitor center would be developed at Crane Lake, the same as the modified proposed action.

Also as described for the modified proposed action, the expansion of visitor centers would be minimized, and no additional facilities would be provided at Kettle Falls. Outdoor exhibits and temporary facilities such as a boat classroom would be developed, but the intent would be to minimize disturbance to resources.

**Parking.** As in the modified proposed action, the expansion of parking lots would be minimized in the park. At the Rainy Lake visitor center parking problems (such as short- and long-term use, and an overflow lot) would be addressed, and staff would work with partners to provide additional parking and shuttle services outside the park.

**Boat Launches.** Launch areas would be developed at all visitor centers for nonmotorized boats (the same as the modified proposed action).

**Bicycle and Pedestrian Access.** Signed bike routes would be provided to the Ash River and Rainy Lake visitor centers, but bicyclists and pedestrians would continue to share existing entrance roads, with no special lanes.

As described for the modified proposed action, the National Park Service would work with partners to connect the bicycle trail portions of the Kabetogama–Ash River trail to area bike paths.

**Overnight Facilities.** No additional overnight facilities would be provided in developed areas (the same as alternative 1 and the modified proposed action).

### Lakecountry Area

**Day and Overnight Use Sites.** To provide a generally less crowded visitor experience, between 250 and 275 developed sites would be planned for under this alternative (including existing and new sites), compared to about 400 sites under alternative 1 or 280–320 under the modified proposed action. Overnight use would be regulated through a permit/reservation system. As described for the modified proposed action, the final number of developed sites would be determined through findings of a monitoring system regarding visitor experience and needs. All new tent, day use, and houseboat sites would have to meet the development criteria outlined in the 1988 *Lakecountry and Backcountry Site*

*Management Plan*, with more spacing between sites to meet the density criteria of the lakecountry subareas and to improve the visitor experience.

To preserve the quality of the experience for visitors and to minimize resource disturbance, the maximum party size permitted at each type of site would be based on the capacity of the site's facilities. Lakecountry sites would accommodate 9 people at small sites and 18 people at large sites (see table 4). These party size limits would be strictly enforced and would be the same as all alternatives, except no group campsites would be provided.

**TABLE 4: TYPES AND CAPACITY OF DAY AND OVERNIGHT SITES, ALTERNATIVE 2**

| | | |
|---|---|---|
| Tent campsites | 122 small sites (including 1 universally accessible site in each district, 20 paddle-in sites)<br>23 large sites | 9 people<br>18 people |
| Small campgrounds | 2 campgrounds, 5 sites each | 45 people per campground |
| Group sites | None | None |
| Houseboat sites | 80 | 2 boats per site |
| Day use sites | 17 (including 2 universally accessible sites in each district) | 2 groups with 9 people each (tour boat excepted) |
| Visitor destination day use sites (interpretive sites) | 10–15 | Determined by resource sensitivity and subareas density |

**Density of Use.** The lakecountry shoreline subareas and overall density distribution in this alternative would be the same as the modified proposed action:

subarea 1 (high density: three or more sites within a ½-mile radius) — about 130 miles
subarea 2 (moderate density: fewer than three sites within a ½-mile radius) — about 280 miles
subarea 3 (low density: a maximum of one site per ½-mile radius) — about 240 miles

**Site Condition Assessment.** As described in the modified proposed action, pre-park campsites would be examined to ensure that they met the criteria in the 1988 *Lakecountry and Backcountry Site Management Plan* and were located in conformance with new subarea densities. The *Lakecountry and Backcountry Site Management Plan* would be revised. Excessively damaged developed sites would be closed if they could not be rehabilitated for continued use. Undeveloped sites would be restored, as necessary, to reverse resource damage.

**Day Use.** Day use would not be allowed at developed overnight sites. Day use, with visitors being able to have fires, would only be allowed at designated day use sites. Day use without fires could occur at undeveloped sites unless an area was closed for resource protection or visitor safety.

**Overnight Use at Undeveloped Sites.** Overnight use would only be allowed at developed sites and would be regulated through the permit/reservation system. Site-specific reservations would be designated.

**Fires and Firewood.** Fires would only be allowed in metal fire rings at developed sites. Campstove use would be encouraged through educational programs. Firewood gathering in the park would be prohibited.

**Visitor Destination Sites.** Similar to the modified proposed action, visitor destination sites would be developed to provide a range of experiences at sites that best exemplify the park's natural and cultural significance, and to promote visitor understanding and appreciation of the park. However, under this alternative only 10–15 sites would be developed.

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Also as described for the modified proposed action, these sites would have interpretation and facilities at remote and dispersed locations tailored to ensure sensitive site management; implementation plans for each site would be developed; and careful site monitoring would occur.

### Backcountry Trail Area

**Hiking, Skiing, and Snowshoeing Trails.** As described for alternative 1, current summer and winter trails for nonmotorized use would be retained. No new trails as shown in the 1992 *Wilderness Recommendation* would be developed.

As described for the modified proposed action, a mainland Kabetogama to Ash River trail system would be developed both inside and outside the park for nonmotorized summer and winter use. The trail would be developed in cooperation with partners, and park staff would use nonmotorized grooming in the winter to maintain the trail.

**Hut-to-Hut System.** As described for alternative 1 and the modified proposed action, no provisions would be made for a winter hut-to-hut system in the park.

### Primitive Area

**Camping.** To ensure the maximum preservation of park resources, no at-large summer camping would be allowed in primitive areas.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

### PARKWIDE MANAGEMENT

**Interpretive Programs.** As described for the modified proposed action, there would be an increased emphasis on visitor information, orientation, and interpretive services. A comprehensive interpretive plan would be developed to guide the development of programs and services. Interpretive programs would provide a timely response to critical resource and visitor use issues.

**Interpretive Publications and Projects.** As described for the modified proposed action, the backlog of visitor orientation, information, and safety messages would be addressed.

**Educational and Outreach Programs.** Educational programs would be expanded, as described for the modified proposed action. Current limited opportunities within the park would be expanded. Educational outreach opportunities would be expanded through new communication technologies to classrooms outside the local area.

**Visitor Safety and Contact.** As described for the modified proposed action, staffing would be added for more visitor contact, resource protection, and emergency response capability in the lakecountry and developed areas. Safety enforcement activities (e.g., boating safety, snowmobile speed, operating and IBP compliance), as well as safety outreach programs for visitors, would be increased. Existing visitor safety plans would be reevaluated, needs determined, and plans implemented.

Also as described for the proposed plan, staffing levels for emergency responses would be increased (based on the 1995 *Law Enforcement Needs Assessment*). Emergency communications with service providers would be improved by using up-to-date notification systems, increasing monitoring, and better coordinating activities between agencies.

**Concessions and Visitor Services.** Boat tours and the Kettle Falls concession would be retained, but the Mukooda Lake boat rentals would be eliminated.

### WATER MANAGEMENT AREAS

#### Motorized Use Area

As described for the modified proposed action, interpretive programs would be expanded to include maps, brochures, and other materials to show visitors the historic voyageurs' routes, geologic resources, wildlife, and other historic areas of these waterways.

### LAND MANAGEMENT AREAS

#### Developed Area

As described for the modified proposed action, an educational institute for diversified educational opportunities would be developed in partnership with other entities.

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

### PARKWIDE MANAGEMENT

**Maintenance Program.** A comprehensive preventive maintenance program would be developed and implemented, as described for the modified proposed action.

**Staffing.** Like the modified proposed action, staffing for resource preservation, visitor services, visitor and employee safety, and partnerships would be increased as funding allowed.

**Volunteers.** Reliance on volunteers for base operations would be reduced; volunteers would be used to supplement operations and staffing (the same as the modified proposed action).

**Partnerships.** The following actions would be the same as those described for the modified proposed action.

- Relationships with surrounding public land protection and recreation agencies would be strengthened to enhance preservation in and around the park and to provide visitor facilities not appropriate in the park (such as a large group and RV campground). Relationships with surrounding private landowners and communities would also be strengthened to help provide needed visitor services, park-related education, and resource protection.

- The National Park Service would work more closely with the Minnesota Department of Natural Resources, the U.S. Forest Service, the Ontario Ministry of Natural Resources, and other agencies to develop cooperative and unified ecosystem approaches to both fisheries and wildlife management. Efforts would be made to restore natural fisheries and to work toward the reestablishment of native wildlife species through unified management programs. A fisheries management plan would be developed, as described for the modified proposed action, with a focus on managing sportfishing and developing strategies that emphasize the maintenance and re-establishment of native, self-sustaining fish populations.

- Partnerships with educational, institutional, or private entities would be actively pursued to ensure the preservation and maintenance of cultural resources in the park.

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- Cooperating agencies that provide visitor safety services in conjunction with the National Park Service would be actively supported, and park staff would continue to pursue and maintain memorandums of understanding with them.

### LAND MANAGEMENT AREAS

**Developed Area**

**Operations and Maintenance Facilities.** The following actions would be the same as the modified proposed action:

- Park operations and maintenance facilities in the Rainy Lake district would remain, with minimal expansion (also the same as alternative 1).
- The development plan for Kettle Falls would be revised to include a workstation for park staff.
- A development plan would be prepared for Namakan district operations.
- The Ash River operations area would remain as the maintenance operations hub for the park, with additional facilities for maintenance and fire management, and limited field facilities for resource management within the present disturbed area.
- Offices for ranger operations, interpretation, and other uses would be expanded in the Kabetogama Ranger Station Historic District area once the maintenance and operations in this area were moved to the Ash River operations area.
- At Crane Lake a satellite operations and maintenance facility would be provided in conjunction with the new multi-agency visitor center.

**Park Housing.** Existing housing for NPS employees would be retained, but no new housing would be constructed in the park (the same as alternative 1 and the modified proposed action). As described for the modified proposed action, the National Park Service would pursue a partnership with businesses and organizations outside the park to provide seasonal housing for both park and private resort employees.

## ESTIMATED COSTS

This highly general cost estimate includes repair and rehabilitation, new construction, camping facilities, trails, removal of vacated cabins, studies and plans, programs, and staffing. The cost estimate for alternative 2 is $10,864,882, the second most expensive of the alternatives.

# ALTERNATIVE 3: EMPHASIS ON VISITOR EXPERIENCE AND OPPORTUNITIES

Alternative 3 emphasizes a diversity of opportunities and experiences for visitors. Many of the ideas presented in alternative 1 and 2 are combined to make this alternative. The widest range and largest quantity of activities, facilities, and experiences consistent with Voyageurs' mission, purpose, and significance would be offered. Resource protection to ensure a quality visitor experience would be emphasized. Up to 400 day and overnight sites would be developed (the same as alternative 1), all the trails proposed in alternative 1 would be developed, and a multi-agency visitor center at Crane Lake would be provided. This alternative would allow the greatest number of overnight houseboats in the park, and all visitor centers would be open year-round (same as alternative 2). Additional actions under this alternative include an educational center at one of the visitor centers, two new small campgrounds, and a hut-to-hut system for winter use.

## NATURAL RESOURCES

### PARKWIDE MANAGEMENT

Natural resources would continue to be protected in accordance with current plans and NPS policies, as described for the modified proposed action and alternative 2; protection efforts would be expanded and intensified through research and management. Inventories of natural resources would be completed, and a comprehensive inventory, monitoring, and research program would be developed, including monitoring of resource impacts related to park use. The ability of staff to provide adequate resource protection and to identify trends that need special emphasis would be increased.

As described for the modified proposed action and alternative 2, vacated, nonhistoric cabins would be removed, with the sites restored to natural conditions; park boundaries would be defined through surveys and posted; and resource management plans would be revised as necessary or completed (resource management, visitor experience and resource protection, research, fisheries, water resources, vegetation, primitive area and proposed wilderness management, disturbed land restoration, trails, inventory and monitoring, fire management, lakecountry and backcountry site management, and land protection).

### WETLANDS

Wetlands would be identified and delineated, and restoration would be considered for damaged or degraded wetlands; adverse impacts would be avoided or mitigated (the same as the other alternatives).

### THREATENED OR ENDANGERED SPECIES

Also as described for the other alternatives, threatened or endangered wildlife species, or designated critical habitat for them, would be determined with the U.S. Fish and Wildlife Service and the Minnesota Department of Natural Resources for areas that could be affected by construction, visitor use, or restoration activities. Any potential adverse impacts on listed, proposed, or candidate threatened or endangered species would be avoided, minimized, or otherwise mitigated. Formal consultation under section 7 of the Endangered Species Act would be initiated if an action might adversely affect such a species.

For all projects, surveys for federally listed, proposed, or candidate threatened or endangered plant species and other state rare or sensitive species would be conducted. More intensive surveys would be conducted if similar habitats were found in a project area. The intent would be to manage sensitive plant species at the population level that would ensure its survival within the park. Any sensitive plants discovered in project areas would be protected from human-caused disturbance, and the project would be redesigned to avoid direct impacts on plants and their specific habitat, if possible. Formal consultation would be initiated under section 7 of the Endangered Species Act if an action might adversely affect a listed or proposed species.

### FOREST MANAGEMENT

Under alternative 3 the management of southern transitional boreal forests would be given priority in areas where visitor use and enjoyment would be increased, taking steps to shorten the time for forests to reattain the characteristics and processes found in mature forests. Other second-growth forest areas would be allowed to mature on their own.

### FIRE MANAGEMENT

Natural fire regimes would be reestablished through wildland fire use and prescribed fire only when it would not reduce visitor enjoyment or visitor use.

## CULTURAL RESOURCES

### PARKWIDE MANAGEMENT

As described for the other alternatives, park staff would continue to identify, evaluate, preserve, protect, and share information about all types of cultural resources. Under this alternative a greater emphasis would be placed on interpreting cultural resources and making a greater number of sites more accessible to the public.

### ETHNOGRAPHIC RESOURCES

Native Americans have important cultural connections with the park, and programs with Native Americans to document their historic and contemporary uses of resources in the park would be continued. Native American sites would be protected. The park would work with area Native American bands to determine appropriate methods of treatment and interpretation of ethnographic resources.

### CULTURAL LANDSCAPES

Under this alternative Ellsworth Rock Garden would be fully restored. As described for the modified proposed action and alternative 2, the park would retain evidence of habitation when buildings were removed, except in specific cases; and landscape features (such as earthen embankments) would be protected at selected historic archeological sites. Treatment recommendations for landscapes at Ash River would be implemented; recommendations of the historic waterway study would be undertaken. A selected number of ruins would be actively managed through vegetation control to slow their decline. Treatment plans for other potential cultural landscapes would focus on visitor experiences.

### ARCHEOLOGICAL RESOURCES

As in all the other alternatives, including the modified proposed action, the integrity of intact archeological sites, as identified in the *Cultural Resources Management Plan* and future inventories, would be maintained. Inventories and evaluations would continue in relation to archeological resources, and efforts would be made to prevent further damage to sites. Damage to aboveground resources would be prevented, and impacts to archeological resources would be minimized. Some archeological sites could be developed for visitor access and interpretation.

### HISTORIC PROPERTIES AND STRUCTURES

As in alternative 1, recommendations in the 1990 *Historic Structures Management Plan* would be followed which would result in the preservation of 21 properties with multiple structures (70% of the park's properties eligible for listing on the National Register of Historic Places). Uses for historic properties would focus on their development as visitor destinations. Properties awaiting treatment would be stabilized and protected until funding became available for treatment. At least one property that best represents each of the park's cultural themes would be retained.

### COLLECTIONS

Collection guidelines would be broadened to include objects and specimens of regional significance. As in the modified proposed action, collections would be regularly maintained, and access would be provided to the collections storage facility on a scheduled basis, as well as through onsite and offsite exhibits, the Internet, and publications.

### PUBLIC ACCESS

As described in the modified proposed action and alternative 2, public access to a broader range of cultural resources would be encouraged; destination sites would be selected on the ability of resources to withstand increased use, the cultural theme represented, and the connection to compelling interpretive stories. The level of development would be commensurate with the goals for the management area it is located in, and all other cultural resources would be protected.

In addition, under this alternative all cultural resources identified as visitor destinations would be fully accessible to the public.

## VISITOR USE AND FACILITIES

### PARKWIDE MANAGEMENT

**Entry/User Fees.** A feasibility study for an entry/user fee system would be completed. If needed to offset costs of park operations, the most feasible system would be implemented.

**Overnight Permit System.** A reservation system with fees would be established for all overnight use. Some sites would be available on a first-come, first-served basis, but a fee would still be required. Houseboat users would be required to have a permit and to pay a fee, but they would not have to make reservations. Specific houseboat sites could not be reserved, yet areas would be defined.

**Visitor Experience and Resource Monitoring.** As described for the modified proposed action and alternative 2, park staff would establish a summer/winter use and resource monitoring system, including indicators and standards for five or six key park resource conditions and visitor experiences.

### WATER MANAGEMENT AREAS

#### Integrated Use Area (Motorized and Nonmotorized Uses)

**Integrated Use.** As described for alternative 1 and the modified proposed action, motorized uses (watercraft, private fixed-wing aircraft, and snowmobiles) and nonmotorized uses would continue to be allowed on the four major lakes and on the designated seven interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda). Nonmotorized use would continue on all interior lakes.

**Overnight Houseboat Use.** Through a permit system that would go into effect shortly after the general management plan was approved, a total of 70 overnight houseboats per basin would be allowed — 60 commercial houseboats and 10 private houseboats, for a park total of 140. As described for the modified proposed action and alternative 2, sanitation compliance certificates for blackwater containment would be required for all houseboats in park waters. Concession contracts would be established.

**Fixed-Wing Aircraft.** As described for alternative 1, the commercial fixed-wing aircraft shuttle to Shoepack Lake would continue, and potentially the shuttle between the International Falls airport and the Kettle Falls Hotel could be reestablished. In addition, under alternative 3 commercial fixed-wing aircraft use would be expanded through limited concession contracts that would allow use on Kabetogama Lake near the community of Kabetogama. Private fixed-wing aircraft use would continue on the four major lakes and the seven designated interior lakes.

**Boats on Interior Lakes.** The National Park Service would continue to provide boats on interior lakes for visitors to use, but user fees or management by a concessioner would be considered.

**Snowmobile Trails and Safety Portages / Vehicular Access.** As described for the modified proposed action and alternative 2, the Moose Bay snowmobile portage would be replaced with one at Ranta Bay. However, the Moose Bay portage would be reopened if either the Ranta Bay route was not viable or if it had to be closed in the future. Snowmobile clubs would develop and maintain the section of the Ranta Bay trail/portage that is outside the park.

Also, as described for the modified proposed action and alternative 2, the Mukooda Lake snowmobile trail would be rerouted along the winter truck portage. The portage/trail would be redesigned to be safer for motorized users and to minimize impacts to cultural resources. Trucks would be required to have park permits to use the portage.

**Special Use Zone.** As described for alternative 1 and the modified proposed action, the special use zone would continue to be used for intensive spectator-related recreational activities and other activities directly associated with the Kabetogama resort community. All specialized events would require a special use permit.

### Nonmotorized Use Area

**Interior Lakes.** As described for alternative 1 and the modified proposed action, nonmotorized use would be allowed on all interior lakes. In addition, summer and winter motorized use would also be continued on Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda Lakes.

## LAND MANAGEMENT AREAS

### Developed Area

**Visitor Centers.** As described for alternative 2, year-round operations would be provided at all visitor centers (Rainy Lake, Ash River, and Kabetogama Lake).

As described for the modified proposed action and alternative 2, the National Park Service would cooperate with other entities in developing a multi-agency, year-round visitor center at Crane Lake.

Development plans would be prepared for both the Ash River and Kabetogama Lake visitor centers. At Ash River the plan would consider establishing an environmental education facility, an outdoor amphitheater, and exterior interpretive space. At the Kabetogama Lake visitor center the plan would look at the use of historic structures or other means to meet additional space needs for interpretation and rangers.

**Parking.** As described for the modified proposed action and alternative 2, parking lot expansion would be minimized in the park. Additional parking and shuttle services outside the park would be provided in cooperation with partners.

**Boat Launches.** As described for the modified proposed action and alternative 2, launch areas would be developed at all visitor centers for nonmotorized boats.

**Bicycle and Pedestrian Access.** As described for the modified proposed action, bike lanes or paths would be developed along the entrance roads to Ash River and Rainy Lake visitor centers. Park staff would pursue the development of trail connections or linkages to existing lanes/paths outside the park.

As described for the modified proposed action and alternative 2, the National Park Service would work with partners to connect the bicycle trail portions of the Kabetogama–Ash River trail to area bike paths.

**Overnight Facilities.** Under alternative 3 one additional small campground would be constructed at Kettle Falls as a concession operation. Also, a campground would be developed at Sullivan Bay.

### Lakecountry Area

**Day and Overnight Use Sites.** Under alternative 3 about 400 day and overnight sites would be planned for (including existing and new), based on the 1988 *Lakecountry and Backcountry Site Management Plan* (see table 5). As described for the modified proposed action and alternative 2, the final number of developed sites would be determined through a monitoring system established to collect data regarding visitor experience and needs. The *Lakecountry and Backcountry Site Management Plan* would be revised. All new tent, day use, and houseboat sites would have to meet the development criteria outlined in the 1988 plan, with an emphasis on more spacing between sites to ensure privacy. Maximum party sizes permitted at each type of site in the lakecountry, ranging from 9 to 72 people, would be enforced.

### TABLE 8: TYPES AND CAPACITY OF DAY OF OVERNIGHT SITES, ALTERNATIVE 3

| | | |
|---|---|---|
| Tent campsites | 208 small sites (including 1 universally accessible site in each district, 20 paddle-in sites, and 5–10 sites along trails)<br>27 large sites | 9 people<br>18 people |
| Small campgrounds | 4 campgrounds, each with 5 sites (2 existing, plus 1 at Sullivan Bay, 1 at Kettle Falls) | 45–60 per campground |
| Group sites | 4 | 72 people |
| Houseboat sites | 120 | 2 boats per site |
| Day use sites | 28 (including 1 universally accessible site in each district) | No use limit |
| Visitor destination day use sites (interpreted sites) | 15–25 | Determined by resource sensitivity and subarea density |

**Density of Use.** The lakecountry subareas and density distribution would be the same as alternative 1:

subarea 1 (high density: three or more sites within a ½-mile radius) — about 270 miles
subarea 2 (moderate density: fewer than three sites within a ½-mile radius) — about 145 miles
subarea 3 (low density: a maximum of one site per ½-mile radius) — about 240 miles

**Site Condition Assessment.** Through a comprehensive monitoring program, pre-park campsites would be examined to ensure that they met the criteria in the 1988 *Lakecountry and Backcountry Site Management Plan* and new subarea densities. If necessary, sites would be closed and restored to reverse resource damage. Undeveloped sites would not be restored.

**Day Use.** As described for alternative 2, day use with visitors being able to have fires would only be allowed at developed day use sites. Day use without fires could occur at undeveloped sites unless an area was closed for resource protection or visitor safety. Day use would not be allowed at overnight sites.

**Overnight Use at Undeveloped Sites.** No tent camping would be allowed at undeveloped sites; however, houseboaters could moor at developed or undeveloped sites for the night as long as they were 200 yards from developed tent and houseboat sites and ¼ mile from park developed areas.

**Fires and Firewood.** All open fires would have to be in metal fire rings (the same as the modified proposed action and alternative 2). Visitors could gather dead and down firewood except where prohibited (the same as alternative 1). The use of campstoves would be encouraged through educational programs (the same as the modified proposed action).

**Visitor Destination Sites.** As described for the modified proposed action, between 15 and 25 visitor destination sites would be developed at places that best exemplify the park's natural and cultural significance in order to promote visitor understanding and appreciation of the park. Some historic structures would be restored, but they would not be interpreted or open to the public due to resource sensitivity or because other sites would be better able to represent a particular theme.

### Backcountry Trail Area

**Hiking, Skiing, and Snowshoeing Trails.** As described for alternative 1, current summer and winter trails for nonmotorized use would be retained. Summer hiking trails that were shown in the proposed *Wilderness Recommendation* would be constructed, as funding and staffing allowed.

As described for the modified proposed action and alternative 2, a mainland Kabetogama to Ash River trail system for nonmotorized summer and winter use would be developed both inside and outside the park in cooperation with partners. Park staff would use nonmotorized grooming in the winter to maintain the trail.

As described for the modified proposed action, the feasibility of extending the Kabetogama to Ash River trail to Crane Lake would be studied in cooperation with partners. If the extension proved feasible, it would be developed as a cooperative effort.

**Hut-to-Hut System.** Under this alternative a winter hut-to-hut system would be developed along the proposed Kabetogama–Ash River trail for snowshoers and cross-country skiers. A hut-to-hut system would also be established along snowmobile trails for snowmobilers. Huts in the park would be removed each spring. In partnership with other entities, the park staff would encourage the development of a regional winter hut-to-hut system, with links to the trails and huts in Voyageurs National Park.

**Camping.** From 5 to 10 additional campsites would be developed along new trails in the backcountry.

### Primitive Area

**Camping.** As in the modified proposed action, at-large camping would be permitted throughout the park's primitive areas, with a maximum of six people per site (the same as the modified proposed action). Primitive area campers would be required to have a park permit. No fires would be allowed, and campers would be expected to follow leave-no-trace practices.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

### PARKWIDE MANAGEMENT

**Interpretive Programs.** As described for the modified proposed action, there would be an increased emphasis on visitor information, orientation, and interpretive services, and additional staffing would be sought for these programs as well as a reservation system. To ensure that visitors had ample opportunities to learn about and appreciate the park's significance, a comprehensive interpretive plan would be developed to guide the expansion of programs and the development of exhibits, displays, publications, and other educational tools. Interpretation would focus on themes based on the park's mission, purpose, and significance to a depth not possible under current staffing. Interpretive programs and projects would provide a timely response to critical resource and visitor use issues.

**Interpretive Publications and Projects.** As described for the modified proposed action and alternative 2, the backlog of visitor orientation, information, and safety messages would be addressed through increased staffing and funding of publications.

**Educational and Outreach Programs.** As in the modified proposed action and alternative 2, educational programs would be expanded to cover a greater diversity of subjects that would be appropriate to a variety of age groups. The current limited opportunities within the park would be expanded by developing new curricula beyond the current environmental education boat trips. Educational outreach opportunities would primarily be expanded through the use of new communications technologies to classrooms outside the local area.

**Visitor Safety and Contact.** As described for the modified proposed action and alternative 2, staffing would be added for more visitor contact, resource protection, and emergency response capability in the lakecountry and developed areas. Safety enforcement activities (e.g., boating safety, snowmobile speed, operating and IBP compliance), as well as safety outreach programs for visitors, would be increased. Existing visitor safety plans would be reevaluated, needs determined, and plans implemented.

Also as described for the modified proposed action and alternative 2, staffing levels for emergency responses would be increased (based on the 1995 *Law Enforcement Needs Assessment*). Emergency communications with service providers would be improved by using up-to-date notification systems, increasing monitoring, and better coordinating activities between agencies.

**Concessions and Visitor Services.** As in alternative 1, the current level of concession services (boat tours, lodging, food service, and boat rentals) would be maintained. In addition, as described for the modified proposed action, additional services (such as providing tour boats from other locations, firewood, boats on interior lakes, and water taxi service) could be considered.

### WATER MANAGEMENT AREAS

#### Motorized Use Area

Interpretive programs would be expanded to include maps, brochures, and other materials to show the historic voyageurs' routes for both motorized and nonmotorized users (the same as the modified proposed action and alternative 2).

### LAND MANAGEMENT AREAS

#### Developed Area

An institute for diversified educational opportunities would be developed in partnership with other entities (the same as for the modified proposed action and alternative 2).

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

### PARKWIDE MANAGEMENT

**Maintenance Program.** As described for the modified proposed action and alternative 2, a comprehensive preventive maintenance program would be developed and implemented.

**Staffing.** Staffing for resource preservation, visitor services, visitor and employee safety, and partnerships would be increased as funding allowed, as described for the modified proposed action and alternative 2.

**Volunteers.** Reliance on volunteers for base operations would be reduced; volunteers would be used to supplement operations and staffing (the same as the modified proposed action and alternative 2).

**Partnerships.** The following actions would be the same as those described for the modified proposed action and alternative 2. Relationships with surrounding public land protection and recreation agencies would be strengthened in order to enhance preservation in and around the park and to provide visitor facilities not appropriate in the park (such as a large group and RV campground). Relationships with surrounding private landowners and communities would also be strengthened to help provide needed visitor services, park-related education, and resource protection.

82

Park staff would work more closely with Minnesota Department of Natural Resources and others to develop unified fisheries and wildlife management programs. Management of park lakes would continue to focus on sport fishing (same as alternative 1).

As in the modified proposed action and alternative 2, partnerships with educational, institutional, or private entities would be actively pursued to ensure the preservation and maintenance of cultural resources in the park.

Cooperating agencies that provide visitor safety services in conjunction with the National Park Service would be actively supported, and park staff would continue to pursue and maintain memorandums of understanding with them.

### LAND MANAGEMENT AREAS

#### Developed Area

**Operations and Maintenance Facilities.** The Rainy Lake district operations and maintenance facilities and park headquarters would be retained, with minimal expansion (the same as alternative 1).

As described for the modified proposed action and alternative 2, the development plan for Kettle Falls would be revised to include a workstation for park staff.

A development plan would be prepared for Namakan district operations. The plan would (1) present options for expanded indoor and outdoor space for operations and maintenance at the Ash River operation area (expansion within and beyond disturbed area), and (2) determine the most appropriate use of the Kabetogama Ranger Station Historic District.

As in the modified proposed action and alternative 2, a satellite operations and maintenance facility would be established in conjunction with the new Crane Lake multi-agency visitor center.

**Park Housing.** Existing housing for NPS employees would be retained, and no additional housing would be constructed in the park (the same as alternative 1). As described under the modified proposed action, some historic cabins could be used for staff/ranger housing, if appropriate. Also, the National Park Service would pursue a partnership with businesses and organizations outside the park to provide seasonal housing for both park and private resort employees.

## ESTIMATED COSTS

This highly general cost estimate includes repair and rehabilitation, new construction, camping facilities, trails, removal of vacated cabins, studies and plans, programs, and staffing. The cost estimate for alternative 3 is $13,560,357, the most expensive of all the alternatives.

# ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is defined by the Council on Environmental Quality as the alternative that best meets the criteria or objectives set out in section 101 of the National Environmental Policy Act. The Council on Environmental Quality interprets these criteria as meaning the alternative that "causes the least damage to the biological and physical environment and best protects, preserves and enhances historic, cultural and natural resources." The National Park Service is not obliged to select the environmentally preferred alternative, but it is required to identify it in the environmental impact statement. The planning team has identified alternative 2 as environmentally preferred.

Specific actions in this alternative that are expected to result in benefits for resources relative to the other alternatives include the restriction of overnight tent campers to developed sites only, building the fewest developed sites of any alternative, and prohibiting motorized use on all interior lakes except Mukooda. These actions would help vegetation, wildlife, water quality, air quality, species of special concern, soils, and archeological resources.

Parkwide natural and cultural resource management policies that are part of alternative 2 would also result in the greatest benefits of all alternatives to resources in the park. These include policies for vegetation and fire management that are geared toward reestablishing natural fire regimes to the greatest extent possible. Also, alternative 2 would provide for the maximum preservation of historic structures, along with a focus on completing cultural landscape descriptions.

Additional information on the degree to which each alternative meets the section 101 criteria is available by reading the summary sections titled "Consistency with NEPA Sections 101 and 102(1)" at the end of each impact analysis in chapter 4.

94

# ACTIONS CONSIDERED BUT REJECTED

**During the planning process the National Park Service received comments and suggestions that the planning team considered, but subsequently rejected because of policy, safety, or other restrictions. The following text explains why some actions were considered but rejected.**

## KABETOGAMA PENINSULA

In 1992 a total of 127,436 acres of lands and waters were recommended to Congress for wilderness designation, including 2,442 acres of potential wilderness additions. Areas proposed as wilderness are administered according to the Wilderness Act and approved NPS *Management Policies 2001* for wilderness preservation and management, and they are to be managed for the long-term protection of wilderness character and values pending congressional action (NPS 2000; also see page 123). Only nonmotorized recreation is permitted within proposed wilderness areas. The proposed wilderness area includes the majority of wilderness qualities that make Voyageurs unique in the national park system — a land surface shaped by glaciation into an endless system of internal waterways, with a sense of vastness that is reinforced by a continuous forest mantle interrupted by bogs, beaver ponds, streams, sandy beaches, and rocky cliffs. This primitive landscape offers numerous recreational opportunities for backpacking, hiking, canoeing, kayaking, fishing, cross-country skiing, nature study, and photography.

Therefore, some of the actions suggested during the public review cannot be proposed because they are in conflict with the National Park Service's policy on motorized use in recommended wilderness. The rejected actions are as follows:

- using some old trails for snowmobiling
- reopening roads to interior lakes
- developing more snowmobile trails, specifically north-south routes across the peninsula
- developing a transpeninsula trail (this trail was evaluated and rejected in 1992 as part of wilderness proposal)

## VISITOR FACILITIES

Certain visitor facilities, although seemingly possible, are not appropriate or are not allowed in national parks.

> *Construct remote bathroom facilities* — The physical features of a site and the distance requirement for servicing privies in more remote areas are limiting factors. The National Park Service uses vault toilets to prevent leakage into the park's lakes. Vault toilets must be located within 150 feet from shore in order to be emptied.
>
> *Develop summer motorized portage from Black Bay to Kabetogama Lake* — This area is mostly wetland and would require significant alterations to the natural environment to accommodate a mechanized portage. The mechanized portage at Kettle Falls provides this service.
>
> *Develop mountain bike trails in the park* — Mountain bike trails are against NPS policy, and conflict with wilderness area restrictions.

*Provide boats on interior lakes on Mukooda Lake* — NPS boats would be in direct competition with concessioner provided boat rentals.

*Rent cabins in the park to visitors* — A few people at a scoping meeting suggested that cabins acquired by the park be available for rental to visitors. The planning team considered the rental of cabins but concluded that the costs of maintaining seasonal cabins for rental would outweigh any potential benefits. Moreover, such rentals might pose unfair competition to resorts and others offering overnight accommodations in the vicinity of the park, one of the fundamental assumptions made when the park was created. Finally, the results of the policy decisions that the National Park Service would acquire private lands including cabins have been difficult for both the Park Service and for those whose property has been acquired. Any indication that some cabins might remain would only serve to raise questions of equity and fairness.

## WINTER FACILITIES

Voyageurs National Park is the only governmental agency in Minnesota that plows or grooms trails on frozen lake surfaces. Winter operations on the park's lakes are dangerous. The maintenance and patrol of the park's snowmobile trails and Rainy Lake ice road consume all winter operations. The following suggestions were rejected:

*Extend Rainy Lake ice road / construct additional ice roads* — The current 7-mile ice road requires extensive monitoring and maintenance. Extending the ice road and developing new routes would require overland portages to avoid unsafe ice areas. Vehicles, other than snowmobiles, are not allowed to operate on lands within the park that do not have established roads or portages.

*Open all bays to snowmobiling* — The temporary bay closures are important to the protection of wildlife, and they may need to be continued for quality wildlife management.

*Reopen ski trail at Mukooda* — This ski trail was groomed and maintained for a number of years, but use was minimal. Park managers decided to close the trail because of the staff time required for maintenance and the lack of use.

*Expand ski trails on the Kabetogama Peninsula* — Ski trails that are not groomed do not get used. Issues of terrain and access make most of the peninsula unfavorable for additional ski trails. The park is proposing additional ski trails on the mainland that are accessible by car and easy to groom.

## OTHER

The planning team rejected some suggested actions because they did not support the mission, purpose, and significance of the park or are against NPS policies. One example is below.

*Hunting* — Voyageurs National Park's enabling legislation does not allow hunting, trapping, logging, mining, or the use of off-road vehicles in the park.

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### TABLE 6: SUMMARY OF ALTERNATIVES

| [redacted] | [redacted] | [redacted] | [redacted] | [redacted] |
|---|---|---|---|---|
| **PARKWIDE MANAGEMENT** | | | | |
| • Natural Resource Protection | Continue to manage resources in accordance with current plans and NPS policies as allowed by staffing and funding. Where possible, control exotic species invasion, remove vacated, nonhistoric cabins and restore sites; and monitor visitor use areas.<br>Continue to conduct baseline inventory and monitoring of park resources (e.g., wildlife, air quality, and vegetation); provide minimal ecosystem management through partnerships. Conduct limited monitoring to detect resource violations and negative use trends. | Expand and intensify natural resource protection efforts through inventories, research and management. Develop a comprehensive inventory, monitoring, and research program.<br>Revise, or develop and implement needed plans (e.g., resource management, visitor experience/resource protection, research, fisheries, water resources, vegetation, primitive area management, disturbed land restoration, trails, developed site management, inventory, and monitoring, houseboat management, and land protection). | Same as modified proposed action. | Same as modified proposed action. |
| • Wetlands | Identify and delineate wetlands, if appropriate. Consider restoring damaged or degraded wetlands. Avoid or mitigate adverse impacts. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| • Threatened or Endangered Species | First consult with the U.S. Fish and Wildlife Service informally if any state or federally listed or proposed threatened or endangered species is found, or if designated critical habitat exists in areas that would be affected by construction, visitor use, or restoration activities.<br>Attempt to avoid, minimize, or otherwise mitigate any potential adverse impacts on state or federally listed or proposed or candidate species. Initiate formal consultation under section 7 of the Endangered Species Act if an action or proposed project might adversely affect a listed or proposed species. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |

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| • Threatened or Endangered Species (cont.) | Although no federally listed, proposed, or candidate threatened or endangered plant species are known to occur within the park, continue to conduct surveys for these and other state rare or sensitive species incidental to other projects. Conduct more intensive surveys of similar habitats to determine the extent of rare plant populations in a project area. Emphasize management of sensitive plant species at the population level to ensure their survival within the park. Protect any sensitive plants discovered in project areas from human-caused disturbance and redesign the project to avoid direct impacts on the plants and their specific habitat if possible. Initiate formal consultation under section 7 of the Endangered Species Act if an action or proposed project might adversely affect a listed or proposed species. | | | |
| • Forest Management | Allow southern transitional boreal forests to mature without intervention. | Emphasize managing southern transitional boreal forest stands that are critical to ecosystems restoration while still ensuring that forests are managed to contribute to visitor use and enjoyment of the park. Develop steps to shorten the time for forests to reattain the characteristics and processes found in mature forests. | Same as modified proposed action except base management decisions more heavily on enhancing forest conditions than on benefiting visitor use and enjoyment. | Give priority to areas where visitor use and enjoyment would be increased and take steps to shorten time for forests to reattain the characteristics and processes found in mature forests. Allow other second-growth forest areas to mature on their own. |
| • Fire Management | Continue to implement the existing *Wildland Fire Management Plan*, recognizing limitations due to weather and available firefighters. Reestablish natural fire regimes to the greatest extent possible without unduly reducing visitation or visitor enjoyment through wildland fire use and prescribed fire. | Revise the *Wildland Fire Management Plan* to support a broader range of resource management objectives, including restoring fire in forests as a natural ecological process. Reestablish natural fire regimes without unduly reducing visitation or visitor enjoyment through wildland fire use and prescribed fire. | Reestablish natural fire regimes to the greatest extent possible through wildland fire use and prescribed fire, even if it caused temporary inconvenience to visitors or temporary reduction of visitor enjoyment. | Reestablish natural fire regimes through wildland fire use and prescribed fire only when it would not reduce visitor enjoyment or visitor use. |
| • Delineation of Park Boundaries | Do not survey and consistently mark park boundaries due to priorities and lack of funding. | Define, by surveying and posting, the boundaries of the park. | Same as modified proposed action. | Same as modified proposed action. |

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| | | | | |
|---|---|---|---|---|
| **PARKWIDE MANAGEMENT** | | | | |
| • Cultural Resource Protection | Continue to identify, evaluate for significance, preserve, protect, and share information about all types of cultural resources (historic properties and structures, cultural landscapes, archeological and ethnographic resources, and collections). | Same as alternative 1. | Same as alternative 1 except focus more on research and preserving resources than on making sites accessible to the public. | Same as alternative 1. |
| | Continue current partnerships and pursue additional partnerships for the preservation, protection, and use of cultural resources. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| | Protect cultural resources through occasional patrols as allowed by funding. | Be more proactive in resource management, particularly by developing and implementing treatment plans. Protect cultural resources through a formal monitoring program and more focused public education. Concentrate preservation on the most significant resources, and consider more alternatives for resources. | Same as modified proposed action. | Same as modified proposed action except place a greater emphasis on interpreting cultural resources and making more sites accessible to the public. |
| • Ethnographic Resources | Continue to recognize Native Americans as an important cultural element of the park, with opportunities for visitors to observe, experience, and learn about traditional practices. | Same as alternative 1 plus work with Native American bands to seek appropriate methods of interpreting ethnographic resources. | Same as alternative 1. | Same as alternative 1. |
| | Continue research to better understand the historical occupation and uses of the park, as well as ongoing uses, by Native Americans. Seek greater involvement by Native Americans in managing ethnographic resources. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| | Respond to requests from traditionally associated tribes for site access. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| | Protect Native American sites by diverting development, access, and transportation routes away from them. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| • Cultural Landscapes | Document all eligible landscapes. Maintain the existing integrity and character of cultural landscapes (i.e., Kettle Falls, Gold Mine Historic District, Rainy Lake City, Hoist Bay, and | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |

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| • Cultural Landscapes (cont.) | Kabetogama Ranger Station Historic District), and protect them from inadvertent damage or destruction. | | | |
| | Protect landscape features (i.e., earthen embankments) at selected historic archeological sites through vegetation control. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| | Partially restore Ellsworth Rock Garden as directed by the 1998 "Preservation Treatment Plan" for this area. Retain evidence of habitation, as feasible. | Same as alternative 1. | At Ellsworth Rock Garden focus management on preserving and protecting existing features rather than restoration. | Fully restore Ellsworth Rock Garden. |
| | Complete treatment recommendations for landscapes at Ash River. | Implement treatment recommendations for landscapes at Ash River. Complete cultural landscape reports and site development plans for management of landscapes at visitor destinations. | Same as modified proposed action plus develop and implement treatment plans for other potential park landscapes such as Hoist Bay, Rainy Lake City, and the Kabetogama Ranger Station Historic District. | Same as modified proposed action. |
| | Complete historic waterways study. | Implement the historic waterways study recommendations to protect and interpret important fur trade route features. | Same as modified proposed action. | Same as modified proposed action. |
| | Actively manage ruins through vegetation control. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| • Archeological Resources | Maintain the integrity of archeological sites identified in the *Cultural Resources Management Plan* and in future inventories. Continue to inventory and evaluate resources. Work to prevent further damage to significant sites threatened by erosion. | Same as alternative 1 plus complete a treatment plan for archeological resources. | Emphasize research as opposed to inventory and evaluation of resources. Monitor and protect all sites, and take more aggressive steps to stabilize all intact sites threatened with erosion. Implement a vegetation management plan to preserve aboveground resources at historic archeological sites. | Same as alternative 1. |
| | Prevent damage to aboveground resources through vegetation management. Minimize potential impacts to archeological resources by avoiding or hardening sites. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| • Historic Properties and Structures | Continue to use the 1990 *Historic Structures Management Plan* to provide the framework for current treatment decisions. | Complete revision of *Historic Structures Management Plan*. Use criteria such as significance, integrity, condition, public interest, capability of the park to maintain, potential for reuse or continuing use, political considerations, interpretive potential, and other factors to guide treatment decisions. | Preserve more physical evidence of the long period of human relationship with the environment. | Same as alternative 1. |

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| | Preserve 21 properties with multiple structures (70% of the park's properties eligible for the national register). Stabilize and protect historic properties awaiting full treatment. Retain at least one property that best represents each of the park's cultural themes. | Preserve 16–20 properties with multiple structures (53%–67% of the park's properties eligible for the national register). Use specific treatment identified in the revised *Historic Structures Management Plan*. Stabilize and protect properties awaiting treatment (same as alternative 1). | Preserve as many historic properties as possible (a minimum of 21 properties with multiple structures, or more than 70% of the park's properties eligible for the national register). Consider various partnerships and alternatives for uses. Stabilize and protect properties pending treatment (same as alternative 1). | Same as alternative 1. |
| | Continue to use historic properties for park operations and interpretation. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| • Collections | Continue to collect, record, and safely house objects, specimens, and records of Voyageurs' natural, cultural, and administrative history. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1, plus collect specimens significant to the region, not just to Voyageurs. |
| | As long as funding and staffing constraints remain, continue minimal collection maintenance. Allow limited access by park staff, researchers, and the public to the park's storage facility and collected items. | Regularly maintain collection and provide conservation treatment as needed. Provide greater access to collections through multiple means. | Same as modified proposed action. | Same as modified proposed action, plus allow access to collections on a scheduled basis. |
| • Public Access to Cultural Resources | Maintain public access to cultural resources that have been identified as visitor destinations (i.e., Ellsworth Rock Garden, Little American Island, Kettle Falls, Ash River, Harry Oveson Fish Camp). Preserve other historical properties but do not formally develop all of them for public access. | Encourage public access to a broader range of cultural resources representing all periods of the park's history. Select destination sites based on the resources' ability to withstand increased use, cultural theme represented, and connection to compelling interpretive stories. Develop facilities commensurate to the goals of the management area. Protect all other cultural resources. | Same as the modified proposed action. | Same as modified proposed action, plus provide full public access to visitor destinations. |
| **PARKWIDE MANAGEMENT** | | | | |
| • Entry/Facility Use Fees | Continue no-fee access to the park for all users. Congress may direct the park to institute entry/user fees in the future. | Do not charge entry fees for day use. With public input, study feasibility of implementing a facility use fee (e.g., camping and parking) within three years. If feasible, implement the approved recommendation soon after the study was approved. | Implement user fees, such as an annual pass, day pass, or parking fee. (Based on the current NPS fee demonstration program, Voyageurs would retain 80% of collected fees to help fund park operations.) | Complete feasibility study for an entry/user fee system. If needed to offset costs of park operations, implement the most viable entry/user fee system. |

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| • Overnight Permit System | Require a free, self-registration permit for all overnight use in the park (as recommended in the approved 1988 *Lakecountry and Backcountry Site Management Plan*). | With public input, complete a feasibility study of an overnight permit system within three years after approval of the general management plan; address issues such as fees, permit distribution, regulations, and management. Implement the most feasible recommendations as soon as possible. No sooner than 2002 require a no-fee, self-registration permit for all overnight summer and winter use (use-and-occupancy residents and private landowners exempted). Require all overnight users at both developed and undeveloped sites (including overnight, in-water anchoring) to obtain these permits. Use the system to gather information on site use and to educate visitors about park conditions, activities, and rules. (Permits would not be used to direct visitors to specific overnight sites.)<br>Require free overnight permits for groups of 18 or more people in 2002. | Implement a reservation system with fees for all overnight use. Require reservations for all tent and houseboat sites. | Established a fee system for all overnight use (tent campers and houseboaters). Allow campers to reserve some sites, while others would be available on a first-come, first-served basis. Do not require reservations for houseboat sites. |
| • Visitor Experience and Resource Monitoring | Continue collecting limited data about visitor use patterns, visitor needs and experience, resource impacts of day/overnight use, and restoration needs. | Establish a monitoring system to understand seasonal visitor use patterns, visitor needs and experience, resource impacts of day and overnight use, and restoration needs. Use information from the no-fee permit, overnight permit system study as part of the monitoring program. Use information for resource preservation, appropriate carrying capacities, quality visitor experiences, and facility development. Establish indicators and standards for monitoring key park resource conditions and visitor experiences in both summer and winter. Develop visitor use facilities based on a strategy that would identify current and potential visitor use patterns and demands, desired visitor experiences, and resource conditions. | Same as modified proposed action. | Same as modified proposed action. |

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| **WATER MANAGEMENT AREAS** | | | | |
| ***Integrated Use Areas*** | | | | |
| • Integrated Use | Continue year-round motorized uses (watercraft, fixed-wing aircraft, and snowmobiles) and nonmotorized uses on the park's four major lakes and seven designated interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda). | Same as alternative 1. | Same as alternative 1 for the four major lakes. In summer allow motorized use only on Mukooda Lake but no other interior lakes. In winter allow motorized use on Chain of Lakes Trail, Mukooda Lake, and four major lakes. | Same as alternative 1. |
| • Overnight Houseboat Use | Allow an unlimited number of houseboats in the park. | With public input, develop a houseboat management plan as a high priority by 2005. Study topics such as commercial and private houseboat use, graywater management, users' needs and desires, and appropriate numbers of houseboats. Determine a limit for the number of overnight houseboats.<br>Pending completion of the plan, establish an interim limit of 60 overnight houseboat permits per basin (park total of 120 houseboat permits). | Through a permit system allow a total of 50 overnight houseboats per basin — 40 commercial houseboats and 10 private houseboats, for a park total of 100. | Through a permit system allow a total of 70 overnight houseboats per basin — 60 commercial houseboats and 10 private houseboats, for a park total of 140. |
| | Do not establish concession contracts or permits for commercial houseboats. | Do not establish any limited concession contracts with commercial houseboat companies. | Establish limited concession contracts with commercial houseboat companies. | Same as alternative 2. |
| | Do not require sanitation compliance certificates for houseboats. | Require sanitation compliance certificates for blackwater containment for all houseboats. | Same as modified proposed action | Same as modified proposed action |
| • Fixed-Wing Aircraft | Continue private fixed-wing aircraft use on the four major lakes and seven designated interior lakes. | Same as alternative 1. | Continue to allow private fixed-wing aircraft on the four major lakes, but prohibit private use on all interior lakes except Mukooda. | Same as alternative 1. |
| | Continue commercial shuttle to Shoepack Lake; allow second shuttle to be reestablished between the International Falls airport and Kettle Falls Hotel. | Same as alternative 1. | Discontinue commercial fixed-wing aircraft use in the park. | Same as alternative 1, plus allow commercial fixed-wing aircraft use through limited concession contracts to start and end on Kabetogama Lake near the community of Kabetogama. |
| • Boats-on-Interior-Lakes Program | Continue to provide nonmotorized boats on seven interior lakes free of charge. | Continue to provide nonmotorized boats on interior lakes, but require user fees beginning summer of 2002. | Discontinue the boats on interior lakes program. | Continue to provide nonmotorized boats on interior lakes, but consider user fees or management by a concessioner. |

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| • Snowmobile Trails and Safety Portages / Vehicular Access | Retain existing snowmobile trails and safety portages. | Retain snowmobile trails/portages. Replace Moose Bay snowmobile portage with portage at Ranta Bay. If this option is not viable, or the Ranta Bay trail needs to be closed in the future, reopen the Moose Bay portage. | Same as modified proposed action. | Same as modified proposed action. |
| • Mukooda Lake Snowmobile Portage and Truck Route | Retain snowmobile portage and truck route in current condition. | Reroute Mukooda Lake snowmobile portage along the winter truck route. Redesign portage to make it safer for motorized users and to minimize impacts to cultural resources. Allow trucks only with permits for nonrecreational use (issue permits no sooner than winter of 2001–2 and after the main snowmobile season). | Same as modified proposed action. | Same as modified proposed action. |
| • Special Use Zone | Continue to manage and approve special use permits for intensive spectator sports in the special use zone near the Kabetogama resort community. | Continue the special use zone, and permit special events when (1) there was a meaningful association between the park area and the event, and (2) the event would contribute to visitor understanding of the significance of the park area. | Discontinue the special use zone near the Kabetogama resort community. | Same as alternative 1. |
| ***No-Wake Water Area*** | Designate no areas for no-wake boating on the four major lakes. | Same as alternative 1 plus develop brochures and outreach programs that focus on boating etiquette. | Designate no-wake boating areas in specific bays on the four major lakes. | Same as modified proposed action. |
| ***Nonmotorized Use Area*** | | | | |
| • Interior Lakes | Continue to allow integrated motorized and nonmotorized use on Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda Lakes. Continue nonmotorized uses on all other interior lakes. | Same as alternative 1. | During summer designate all interior lakes, except Mukooda, as nonmotorized use areas. During winter designate all interior lakes except the Chain of Lakes Trail and Mukooda as nonmotorized use areas. | Same as alternative 1. |

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| **LAND MANAGEMENT AREAS** | | | | |
| ***Developed Area***<br>• Visitor Centers | Maintain year-round operations at Rainy Lake visitor center and seasonal operations at Ash River and Kabetogama Lake visitor centers. | Provide year-round operations at Rainy Lake visitor center. As demand requires, expand or maintain hours and seasons of operation at Ash River and Kabetogama Lake visitor centers Partner in developing a multi-agency, year-round visitor center at Crane Lake with hours determined by demand. | Provide year-round operations at all visitor centers.<br>Partner to develop a multi-agency visitor center at Crane Lake (same as modified proposed action). | Same as alternative 2. |
| | Revise and implement development plans for Ash River, Kabetogama Lake, and Kettle Falls Historic District. | Minimize building and facility expansion at all existing visitor centers and Kettle Falls. Develop outdoor exhibits and seasonal facilities; minimize disturbance to resources. Ensure visitor facilities are sustainable and durable. | Same as modified proposed action. | Prepare development plans for Ash River (consider an environmental education facility, an outdoor amphitheater, and exterior interpretive space) and Kabetogama Lake (consider use of historic structures and additional space needs for interpretive and ranger staff). |
| • Parking | Minimize expansion of parking lots in the park. Evaluate how to more effectively use existing parking lots at the Rainy Lake visitor center. | Minimize expansion of parking lots in the park; address parking issues at the Rainy Lake visitor center (short- and long-term use, overflow lot). Work with partners to provide additional parking and shuttle services outside the park. | Same as modified proposed action. | Same as modified proposed action. |
| • Boat Launches | Retain shared boat launches at visitor centers for motorized and nonmotorized craft. | Develop launch areas at all visitor centers for nonmotorized craft. | Same as modified proposed action | Same as modified proposed action |
| • Bicycle and Pedestrian Access | Continue mixed bicycle, pedestrian, vehicle use on entrance roads to Ash River and Rainy Lake visitor centers. Provide no seperate bike paths. | Develop bike lanes (paved shoulders) or seperate paths to park visitor centers. Pursue trail connections or linkages to existing lanes/paths outside the park. | Provide signed bike routes to Ash River and Rainy Lake visitor centers. (Bicyclists/pedestrians continue to use existing entrance roads). | Same as modified proposed action. |
| | Do not construct a Kabetogama–Ash River trail system; provide no links to area bike paths. | Work with partners to connect the bicycle trail portions of the Kabetogama–Ash River trail system to area bike paths. | Same as modified proposed action. | Same as modified proposed action. |
| • Overnight Facilities | Do not provide camping facilities in developed areas (e.g., near visitor centers). | Same as alternative 1. | Same as alternative 1. | Provide for two additional small campgrounds (one at Kettle Falls [concession] and one at Sullivan Bay). |

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| ***Lakecountry Area***<br>• Day and Overnight Use Sites | Continue to build new tent, day use, and houseboat sites that meet the development criteria outlined in the approved 1988 *Lakecountry and Backcountry Site Management Plan.* Base the number of units on the *Lakecountry and Backcountry Site Management Plan* and that document's criteria. | When building new day and overnight use sites, continue to use the site selection criteria in the *Lakecountry and Backcountry Site Management Plan* (same as alternative 1). However, do not develop sites proposed in that plan that do not meet the criteria or that would create a higher density than established under this alternative. Develcp sites as allowed by funding (5–10 sites per year), with the highest priority for day use sites. | Same as modified proposed action (except for number of sites). | Same as modified proposed action (except for number of sites). |
| | Plan for a total of ~400 sites (including existing and new) based on the *Lakecountry and Backcountry Site Management Plan*, with capacities of 9–72 people. | Plan for a total of ~280–320 sites (including existing and new), based on the *Lakecountry/Backcountry Plan* with capacities of 9–30 people. | Plan for a total of ~250–275 sites (including existing and new) with capacities of 9–18 people. | Plan for a total of ~400 sites (including existing and new) with capacities of 9–72 people. |
| *Tent campsites* | ~ 257 small and large campsites (including 1 universally accessible site in each district).<br>Capacity: small site — 9 people, large site — 18 people. | ~150 small and large campsites (including 1 universally accessible site in each district).<br>Capacity: same as alternative 1. | ~145 small and large campsites (including 1 universally accessible site in each district and ~20 paddle-in sites).<br>Capacity: same as alternative 1. | ~ 230 small and large campsites (including 1 universally accessible site in each district, ~20 paddle-in sites, 5–10 sites along trails).<br>Capacity: same as alternative 1. |
| *Small campgrounds* | 3 (5 sites each).<br>Capacity: 45 people per campground. | 2 (5 sites each).<br>Capacity: same as alternative 1. | 2 (5 sites each).<br>Capacity: same as alternative 1. | 4 (2 existing plus 1 at Sullivan Bay, 1 at Kettle Falls; 5 sites each)<br>Capacity: 45–63 people per campground. |
| *Group campsites* | 4<br>Capacity: 72 people maximum. | 2 Namakan / 1 Rainy<br>Capacity: 30 people. | 0 | 4<br>Capacity: 72 people. |
| *Houseboat sites* | 108<br>Capacity: 2 boats per site. | 108<br>Capacity: same as alternative 1. | 80<br>Capacity: same as alternative 1. | 120<br>Capacity: same as alternative 1. |
| *Day use sites* | 28<br>Capacity: no party size limit. | 28 (including 1 universally accessible site in each district).<br>Capacity: 2 groups of 9 people each (tour boats excepted). | 17 (including 1 universally accessible site in each district).<br>Capacity: same as modified proposed action. | 28 (including 1 universally accessible site in each district).<br>Capacity: no party size limit. |
| *Visitor destination day use sites* | None | 15–20<br>Capacity: determined by resource sensitivity and subarea density. | 10–15<br>Capacity: same as modified proposed action. | 15–20<br>Capacity: same as modified proposed action. |

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| *Visitor destination day use sites (cont.)* | | Concentrate on establishing additional day use sites. Monitor use and visitor needs to determine if additional sites are needed. If so, convert some of the proposed tent sites to day use sites. | | |
| • Lakecountry Management Area Density | Establish a high density for most of the lakecountry shoreline:<br>Subarea 1 (high density) ~270 mi<br>Subarea 2 (moderate density) ~145 mi<br>Subarea 3 (low density) ~240 mi | Establish a moderate to low density for most of the lakecountry area:<br>Subarea 1 (high density) ~130 mi<br>Subarea 2 (moderate density) ~280 mi<br>Subarea 3 (low density) ~240 mi | Same as modified proposed action. | Same as alternative 1. |
| • Site Condition Assessment | Continue occasional monitoring of developed sites. As staffing and funding allow, rehabilitate sites for continued use. If necessary, close excessively damaged sites to avoid further resource impacts. Do not monitor or restore undeveloped sites. | Examine pre-park sites to ensure they meet the criteria of the *Lakecountry and Backcountry Site Management Plan* and subarea densities. If necessary, restore sites to reverse resource damage, rehabilitate with proper facilities, or close. If use of undeveloped sites was discontinued as a result of comprehensive monitoring, restore excessively damaged sites to natural conditions. | Same as modified proposed action except allow no use at undeveloped sites and restore as necessary. | Same as modified proposed action. |
| • Day Use | Continue to allow day use, with fires, at developed sites until 4 P.M. Continue to allow day use, with fires (in metal fire rings and previously established rock rings), at developed and undeveloped sites unless the area was closed for resource protection or visitor safety. | Allow day use, with fires, at developed tent sites until 2 P.M. Do not allow day use at houseboat sites since these sites are not equipped with vault toilets. Only permit fires for day use at developed sites. Allow day use without fires at undeveloped sites unless the area was closed for resource protection or visitor safety. Consider day use of developed tent sites in overnight permit system feasibility study | Discontinue day use at developed tent sites. Allow fires only at developed day use sites (same as modified proposed action). Allow day use without fires at undeveloped sites unless the area was closed for resource protection or visitor safety (same as modified proposed action). | Same as alternative 2. |
| • Overnight Use at Undeveloped Sites | Continue to allow the use of undeveloped sites by tent campers and houseboaters (200 yards from a developed site and ¼ mile from park developed areas). If use of undeveloped sites was diminishing the resources or the visitor experience, then limit use to developed sites only. | Continue to allow the use of undeveloped sites by tent campers and houseboaters (same as alternative 1). But conduct a monitoring study in conjunction with the overnight permit system study to determine if the use of undeveloped sites causes unacceptable resource damage (e.g., sanitation problems, vegetation trampling, and out of control fires). Separately evaluate the Rainy and | Allow overnight use only at developed sites and regulate through the overnight permit/reservation system, with site-specific designations. | Continue to allow the use of undeveloped sites by houseboaters as long as they are 200 yards from a developed site and 1/4 mile from park developed areas (same as alternative 1). Require tent campers to use developed sites only. |

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| • Overnight Use at Undeveloped Sites (cont.) | | Namakan Districts, as well as tent campers and houseboaters. If found to cause negative impacts, phase out use or implement other strategies. | | |
| • Fires and Firewood | Allow fires in metal fire rings or previously established rock rings, but encourage campstove use at undeveloped sites. Continue to allow gathering of dead and down firewood except where prohibited. | Starting summer of 2005 allow fires only in metal fire rings at developed sites. In 2005 require liquid fuel campstoves for day and overnight use at undeveloped sites. Allow gathering of dead and down firewood (same as alternative 1). Encourage visitors to bring their own firewood or to buy it from local vendors. | Allow fires only in metal fire rings at developed sites (same as modified proposed action). Encourage the use of campstoves through education programs (same as alternative 1). Prohibit firewood gathering. | Allow fires only in metal fire rings at developed sites (same as modified proposed action and alternative 2). Encourage the use of campstoves through education programs, and allow gathering of dead and down firewood (same as alternative 1). |
| • Visitor Destinations | Develop a few interpretive facilities, services, or media at visitor destinations as allowed by funding. Provide interpretive media at most historic structures on a project-by-project basis. Install interpretive media in restored or rehabilitated structures as a top priority, recognizing funding would be extremely limited so progress would be gradual. | Develop 15–20 visitor destination sites at locations that best exemplify the park's natural and cultural significance to provide a range of experiences, to promote visitor understanding and appreciation, and to provide visitor attractions. Develop implementation plans for each visitor destination and monitor sites to ensure appropriate management. Tailor facilities and interpretation to an appropriate and sustainable level for each site. | Similar to the modified proposed action, but develop 10–15 visitor destination sites. | Similar to the modified proposed action, but develop 15–25 visitor destination sites. |
| ***Backcountry Trail Area*** | | | | |
| • Hiking, Skiing, and Snowshoeing Trails | Retain existing trails for nonmotorized summer and winter use. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| | Develop summer hiking trails proposed in the *Wilderness Recommendation*, as allowed by funding and staffing. This would provide additional trails primarily on the Kabetogama Peninsula and islands; most trails would comprise small loops. | Develop the following summer hiking trails:<br>Kabetogama Peninsula: Kettle Falls to Beast Lake, Jorgens Lake to Little Shoepack Lake<br>Loop trail near Lost Bay on Kabetogama Lake<br>Mukooda Lake to King Williams Narrow (near Sand Point Lake)<br>Dryweed Island loop trail (Rainy Lake)<br>Short interpretive trails as part of some cultural and natural resource visitor destination areas | Develop no new trails shown in the *Wilderness Recommendation*. | Develop summer hiking trails proposed in the *Wilderness Recommendation*, as allowed by funding and staffing (same as alternative 1). |

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| • Hiking, Skiing, and Snowshoeing Trails (cont.) | Do not construct a Kabetogama–Ash River trail. | In cooperation with partners, develop a mainland Kabetogama–Ash River trail (summer/winter nonmotorized use). | Same as modified proposed action. | Same as modified proposed action. |
| | | Work with partners to evaluate the feasibility of extending the Kabetogama–Ash River trail to Crane Lake. If feasible, partner to develop the trail. | | Same as modified proposed action. |
| • Hut-to-Hut System | Make no provisions for a winter hut-to-hut system in the park. | Same as alternative 1. | Same as alternative 1. | Establish and provide for a winter hut-to-hut system along the proposed Kabetogama–Ash River trail system for nonmotorized uses, and a hut-to-hut system along the snowmobile trail system (remove park huts in spring). Partner with others to encourage regional winter hut-to-hut system, with links to park system. |
| • Camping | | | | Develop 5–10 additional campsites along new trails in the backcountry. |
| ***Primitive Area***<br>• Camping | Continue to allow at-large summer camping, with no party size limit. | Permit at-large camping in primitive areas, with 6 people maximum per group and permits required starting in 2002. Allow no fires. Require campers to follow leave-no-trace practices. | Do not allow at-large summer camping. | Same as modified proposed action. |
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| **PARKWIDE MANAGEMENT** | | | | |
| • Interpretive Programs | Continue limited in-depth coverage when interpreting the park's significance or responding to critical issues due to staffing and funding. Do not develop a comprehensive interpretive plan. | Increase emphasis on visitor information, orientation, and interpretation; seek additional staffing. Develop a comprehensive interpretive plan for expanded programs, exhibits, displays, publications, and other educational tools. Focus interpretation on themes based on park's mission, purpose, and significance to a greater depth. Provide timely responses to critical resource/visitor use issues. | Same as modified proposed action. | Same as modified proposed action. |
| • Interpretive Publications and Projects | Address most critical issues of conflicts first, as allowed by funding and staff. Continue to depend heavily on partners for publication funding. | Address backlog of visitor orientation, information, and safety messages with increased staffing and funding (e.g., interpretive signs at historic sites and informational brochures). | Same as modified proposed action. | Same as modified proposed action. |

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| • Educational and Outreach Programs | Continue limited on- and offsite educational programs. As allowed by grants, staff, or time, develop new outreach methods and broaden subjects. | Expand educational programs to cover more subjects and age levels. Expand in-park opportunities by developing new curricula. Increase educational opportunities with use of new communication technologies. | Same as modified proposed action. | Same as modified proposed action. |
| • Visitor Safety and Contact | Continue limited visitor contact, resource protection, monitoring, and emergency services on the four major lakes; provide no ranger presence in backcountry and primitive areas; depend heavily on support from established partnerships. | Expand and improve visitor contact, resource protection, and emergency response with increased staffing; do limited backcountry patrol for visitor assistance and resource protection; increase presence of rangers to assist visitors and monitor resources, especially on four major lakes. | Same as modified proposed action. | Same as modified proposed action. |
| | Implement existing visitor safety plans (winter operations, buoy management, hazard tree management, search and rescue, and emergency medical). | Reevaluate visitor safety plans and determine needs. Implement the plans consistently on an annual basis. | Same as modified proposed action. | Same as modified proposed action. |
| | Use existing systems and staff levels to communicate visitor requests for emergency assistance. | Increase and maintain staffing levels identified in 1995 *Law Enforcement Needs Assessment* to provide emergency response capability that is commensurate with the visitor experience expected. Increase proactive safety enforcement activities (boating safety, snowmobile speed, operating and incidental business permit compliance). Improve emergency communication systems with service providers. | Same as modified proposed action. | Same as modified proposed action. |
| | Provide limited outreach education regarding safety. | Increase visitor safety education outreach programs. | Same as modified proposed action. | Same as modified proposed action. |
| • Concessions and Visitor Services | Maintain current level of concession services (boat tours, lodging, food service, and boat rentals). | Same as alternative 1, plus consider additional services (tour boats from other locations and water taxi service). | Retain boat tours and Kettle Falls concession, but eliminate Mukooda Lake boat rentals. | Same as modified proposed action. |
| **WATER MANAGEMENT AREAS** | | | | |
| ***Motorized Use Area***<br>• Water-Based Interpretation | Continue dependence on tour boats as venue for large portion of interpretive programs. Continue programs on history of voyageurs but not necessarily on following their routes. | Expand interpretation to include maps, brochures, and other materials from a water-based perspective. Show visitors Voyageurs' routes, geologic resources, wildlife, and other historic uses on park waterways. | Same as modified proposed action. | Same as modified proposed action. |

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| **LAND MANAGEMENT AREAS** | | | | |
| ***Developed Area***<br>• Educational Institute | Continue partnerships with outside entities for seminars and multi-agency opportunities. Do not develop an educational institute. | Partner with others to develop an educational institute to provide special programs and to supplement the park's interpretive program. | Same as modified proposed action. | Same as modified proposed action. |
| **PARKWIDE MANAGEMENT** | | | | |
| • Maintenance Program | Continue park operations with a limited preventive maintenance program. | Develop and implement a comprehensive preventive maintenance program. | Same as modified proposed action. | Same as modified proposed action. |
| • Staffing | Maintain current staffing levels. | Increase staffing as allowed by funding. Focus additional staff on resource preservation, visitor services, visitor/employee safety, and partnerships. | Same as modified proposed action. | Same as modified proposed action. |
| • Volunteers | Rely on volunteers and volunteer organizations to provide visitor services, to staff visitor centers, to lead programs and activities, and to conduct research on the park's natural resources. Rely on volunteers for trail construction. | Reduce reliance on volunteers for base operations; use volunteers to supplement operations and staffing. | Same as modified proposed action. | Same as modified proposed action. |
| • Partnerships and Cooperation | Maintain partnerships for promotion, emergency response, education, trail construction/maintenance, and research. Continue current partnerships for tourism and promotion. Continue to partner with local school districts and technical information educational services to provide acces to local, regional and national populations. | Strengthen relationships with public land protection/recreation agencies to enhance preservation within the park, and to assist neighboring communities with resource issues, to provide a more cohesive approach to economic development, to support community recreational goals outside the park, and to provide needed visitor facilities that may be inappropriate in the park (e.g., RV campground, Crane Lake visitor center, trail linkages). Strengthen partnerships with surrounding private landowners and communities to help provide needed visitor services, park-related education, and resource protection (e.g., septic regulations, water quality). | Same as modified proposed action. | Same as modified proposed action. |
| | Continue limited partnering with the Minnesota Department of Natural Resources for cooperative fishery and | Work more closely with the Minnesota Department of Natural Resources and others to develop cooperative, eco- | Same as modified proposed action. | Same as modified proposed action. |

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| • Partnerships and Cooperation (cont.) | wildlife management. Focus management of park lakes on sportfishing. | system approaches to both fisheries and wildlife management. Attempt to restore native fish and wildlife populations through unified management programs. Develop a fisheries management plan in cooperation with the Minnesota Department of Natural Resources; focus on managing sport fishing and developing strategies to maintain and reestablish native, self-sustaining fish populations. | | |
| | Continue current partnerships; pursue partnerships for cultural resource preservation, protection, and use. | Actively pursue partnerships to ensure preservation and maintenance of cultural resources in the park. | Same as modified proposed action. | Same as modified proposed action. |
| | Continue working with other agencies for visitor safety and emergency response. | Actively support cooperating agencies that provide visitor safety services; continue to pursue and maintain general agreements (e.g., with Coast Guard, First Responders, sheriffs and Minnesota Department of Natural Resources) to help meet visitor needs. | Same as modified proposed action. | Same as modified proposed action |
| **LAND MANAGEMENT AREAS** | | | | |
| ***Developed Area***<br>• Operations and Maintenance Facilities | Retain existing park operations and use areas. Revise the development plan for Kettle Falls and include a workstation for park staff. Continue to use available area-specific development plans. | Same as alternative 1, except seek a new headquarters facility if office and storage space needs exceed current facilitiy.<br>Prepare a development plan for Namakan District operations.<br>Retain Ash River operations area (park maintenance operations hub); expand the area near the building for maintenance, fire management, and limited field facilities for resource management. Confine development to already disturbed areas as possible.<br>Expand ranger operations and interpretation into the Kabetogama Ranger Station Historic District. Continue some maintenance staff presence at Kabetogama, including the main boat harbor for park operations. | Same as modified proposed action. | Same as modified proposed action except expand within and beyond disturbed area at the Ash River operations area, plus determine the most appropriate use of Kabetogama Ranger Station Historic District. |

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| • Crane Lake | Provide additional operations at Crane Lake. | Provide satellite operations and maintenance at Crane Lake in conjunction with multi-agency visitor center. | Same as modified proposed action. | Same as modified proposed action. |
| • Park Housing | Retain existing housing and do not construct any new housing in the park. | Retain existing housing; construct no new housing in the park (same as alternative 1).<br>Pursue partnerships outside the park to provide seasonal housing for both park and private resort employees. | Same as modified proposed action. | Same as modified proposed action. |
|  | $6,879,806 | $9,935,415 | $10,864,882 | $13,560,357 |

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### TABLE 7: SUMMARY OF ENVIRONMENTAL CONSEQUENCES

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| **Air Quality** | Emissions from mobile sources are expected to increase at the same rate as visitor use increases, or about 10% over the life of the plan. This would be a minor adverse impact to air quality and would not constitute an impairment of the park air quality resource. The impact of proposed development on the concentration of large particulates in the park is expected to be negligible. Visibility on the mean of the haziest 20% of days in winter and atmospheric mercury are increasing at a rate that would result in major adverse impacts to air quality compared to existing conditions if the trend continued for the life of this plan, although additional data on visibility is required before the National Park Service can determine if this was a statistically significant trend. Ozone is increasing at a rate that would result in moderate adverse impacts to air quality by the end of this plan's life. | Same as alternative 1. No impairment to park air quality is expected. | Same as alternative 1, except negligible benefits from closing interior lakes to motorized use might occur. No impairment to park air quality is expected. | Same as alternative 1 except commercial fixed-wing aircraft use on Kabetogama Lake would add negligible overall, but possibly major, intermittent localized amounts of pollutants typical of mobile sources. No impairment to park air quality is expected. |
| **Soils** | Continuing the use of developed and undeveloped sites without enforcing group size limits would result in continued expansion of core areas, trampling and destruction of vegetation, and creation of social trails. These impacts would particularly occur in areas with poor soil and where resource protection criteria were not applied, (e.g., older developed sites or undeveloped sites). Impacts from compaction, vegetation loss, loss of organic surface layers, and increased erosion are locally severe at about 20% of developed and presumably undeveloped lakecountry sites. This is a major localized impact, but a minor one parkwide. Moderate adverse localized impacts at about half the park's backcountry sites could increase over a wider area or to major | Continued overnight use of undeveloped sites would have impacts to soils similar to alternative 1. However, if as a result of an impact monitoring study such use was stopped and damaged sites restored, there could be major localized benefits for lakeshore soils, but negligible benefits parkwide. If overnight reservations and/or fees were determined feasible and appropriate, there could be minor to major localized benefits on lakecountry soils as a result of park staff contacting and educating visitors, as well as a possible source of revenue to continue monitoring and restoring soils at damaged sites. Educating campers about low-impact camping and enforcing party size limits for permits in primitive areas could have negligible to moderate localized beneficial impacts on | Alternative 2 would result in the fewest developed sites, with the closure and restoration of undeveloped sites. The reduction in the number of sites would have major localized benefits compared to alternative 1, and restoring undeveloped sites that were damaged would result in the stabilization of soils, an additional major localized benefit. A reservation/fee system for overnight use of developed sites would allow staff to enforce party size and educate campers on park regulations. This could mean a minor benefit to soils at developed sites compared to alternative 1. Minor to moderate local benefits to soils from minimizing development at Ash River and other visitor facilities compared to alternative 1 might also occur. Building only the Kabetogama–Ash River | While alternative 3 would result in the same number of developed sites as alternative 1, more enforcement of party size restrictions and visitor education would keep the sizes of core sites smaller. This could result in 25%–30% less soil disturbance, a major localized positive impact. Closing undeveloped sites to tent camping could mean that hundreds of sites would remain unused and would be naturally restored over time. This would be a possible moderate to major localized benefit. Impacts of restoring developed sites would be similar to alternative 1. Minor localized impacts could result to soils from development at visitor centers, and minor to major localized impacts could result from constructing all the trails planned in this alternative, affecting an |

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| **Soils (cont.)** | localized impacts at some campsites. The impact to backcountry soils parkwide would be negligible or minor. Permitting at-large camping in primitive areas could result in additional minor localized impacts to soils. Expanding visitor centers or developing trails could have moderate localized impacts, although parkwide negligible impacts (adding 48.6 miles of trails would affect about 11 acres of soils). Managing areas recommended for wilderness as wilderness would help keep parkwide impacts to soils from becoming severe, although soils in nonwilderness areas could experience minor to major localized impacts from cumulative development. None of the impacts anticipated under this alternative would have more than minor impacts parkwide, so there would be no impairment of park soil resources. | soils relative to alternative 1. Minimizing the expansion of visitor center facilities would have a minor to moderate localized benefit to soils. Building a total of 54.4 miles of trails, including a 33-mile land segment of the Kabetogama–Ash River trail, would disturb about 12 acres of soil in the park, an indistinguishable change from alternative 1. However, the type of soil affected would be different, and its physical characteristics could impose trail building or maintenance restrictions. No impairment of soils is anticipated. | trail would disturb about 8 acres of soils, 30% fewer acres than alternative 1, although the location and type of soil disturbed would differ. The nature of the soil might impose building or maintenance restrictions on the trail. No impairment of park soils is anticipated. | estimated 20 acres of soils, 66% more than alternative 1. Mitigation of impacts to soils from the development of the Kettle Falls campground would keep them from becoming more than minor. However, the impacts to and challenges of designing and building a campground in clay soils at Sullivan Bay might be more severe and could range from minor to major. Future planning for the campground would ensure no resources would be impaired. Soils in the park are not expected to be impaired. |
| **Vegetation** | The presettlement southern boreal transition forest that characterized the park has been significantly changed by a combination of logging, fire suppression, and development. Alternative 1 would continue present fire management, resulting in the treatment of an estimated 5%–10% of the park's forested communities, a minor benefit parkwide. Impacts from illegal firewood cutting and from more people using campsites than intended, gathering dead and downed firewood, and using or creating undesignated sites without a large-scale restoration effort could result in severe damage on 35%–55% of the park's existing sites, a major localized impact to vegetation, but a minor parkwide impact. Despite the potential for localized impact, the integrity of the park's vegetative resources would remain intact; therefore, continuing these actions would not result in impairment. Allowing fires at all sites has only had negligible or minor impacts on vegetation to date, | Changing the focus of fire management to support a broader range of resource management objectives could have moderate to major localized benefits to native vegetative communities compared to alternative 1, in particular pine and mixed-wood forests. If an overnight permit system was determined feasible and appropriate, such a system could provide moderate to major benefits to lakecountry vegetation through education, control of party size and camping location, and revenues for restoring or mitigating impacts to vegetation.<br>Requiring permits for primitive area campers could have a minor localized benefit and negligible parkwide benefit to backcountry vegetation. If overnight use of undeveloped sites was stopped and excessively damaged sites restored, there would be moderate to major localized benefits to lakecountry vegetation. If overnight use of undeveloped sites continued, impacts to vegetation would be similar to alter- | Changing the focus of fire management to support a broader range of resource management objectives could have moderate benefits to native pine and mixed-wood communities, minor benefits to wetlands compared to existing conditions, and major benefits compared to changes in forests as a result of the use of fire and other practices described in alternative 1.<br>Closing undeveloped sites to overnight use would result in major localized benefits to vegetation compared to alternative 1. Restoring damaged sites would result in additional major localized and minor parkwide benefits for vegetation. Educating visitors about low-impact camping and park regulations through a reservation system could have minor benefits for vegetation at developed sites. Revenues from fees could result in minor to moderate benefits if used to restore vegetation at overnight sites or at other locations in the park. Minimizing the number of overnight sites would | Using fire to restore red/white pine forests in areas of the park most likely to be visited would possibly have major benefits to this vegetative community, and minor benefits in other plant communities compared to alternative 1.<br>Minor to moderate localized benefits to vegetation from closing undeveloped sites to tent camping could occur as these sites restored naturally over the long term. Restoration policies for developed sites and impacts would be similar to those for alternative 1, with possible localized negligible relative benefits. Requiring permits could have a minor localized benefit and negligible parkwide benefit to vegetation in the primitive area. The development of the Kabetogama–Ash River trail would result in major adverse impacts locally in Daley Bay but minor impacts parkwide. Locally severe impacts to wetland or other unique vegetative types from constructing a Sullivan Bay campground would be possible. |

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| **Vegetation (cont.)** | but could result in isolated cases of moderate or major impacts in the future. Minor localized impacts to park vegetation from expanding visitor facilities or building trails would also result from the implementation of this alternative.<br>At-large houseboat mooring could result in moderate localized damage to aquatic vegetation from passengers going back and forth from the boat to the shore; the impact parkwide would be negligible. The effect of increased turbidity from boat propellers would likely be negligible to minor, and it would only occur in shallow water. However, the physical impact of waves or of boats colliding with plants might be moderate locally. The current impact of wave erosion of banks may be minor to moderate on a parkwide basis because motorized use is so widespread, but no data are available to assess this. Severe localized effects on native vegetation from the invasion of certain aggressive exotic aquatic plants, including purple loosestrife and Eurasian watermilfoil, are possible without increased funding for monitoring and removal. Despite the potential for even these major localized impacts from the introduction of exotics, the impacts from the use of motorboats and houseboats do remain localized and are not anticipated to impair the integrity of the park's aquatic vegetation resources, even over the 20-year life of the plan. Major adverse impacts on the structural diversity of shoreline aquatic vegetation have resulted from water level management; minor to major benefits from the implementation of the International Joint Commission's 2000 order are anticipated. | native 1, possibly reaching moderate levels on a parkwide basis. Minimizing expansion of visitor center facilities would have a minor to moderate localized benefit to vegetation.<br>Impacts to aquatic vegetation from at-large houseboat mooring, boat propellers and wave erosion would be the same as alternative 1, except that information in brochures handed out to boaters could have negligible benefits. Impacts to some types of wetland vegetation from completing the Kabetogama–Ash River trail or building boat launches would occur. For the most part, these would be minimal; however spanning the deep marsh at Daley Bay could result in major long-term, localized impacts to vegetation at that site. Because only a small percentage of the park's deep marsh vegetation would be affected, the parkwide impact of building this trail would be minor. Increased funding and staffing could result in negligible to major benefits to native plants from early detection and elimination of exotics. No impairment to the park's aquatic or terrestrial vegetation resource compared to existing conditions is anticipated. | also mean major localized benefits to vegetation in the lakecountry compared to alternative 1. Prohibiting at-large camping in primitive areas could result in negligible to minor positive impacts on vegetation. Impacts to aquatic or wetland vegetation in the area of paddle-in sites could occur, although they would be incidental and likely be no more than locally moderate. Minimizing visitor center facility expansion would have a minor to moderate localized benefit compared to alternative 1 (the same as the modified proposed action). Creating 30% fewer miles of trails could result in major localized benefits to vegetation along those trail routes proposed in alternative 1. Building fewer trail miles overall would have a major localized benefit to upland vegetation.<br>The impacts of increased turbidity from boat propellers in shallow water, or physical impacts of boats colliding with and shearing or removing wetland vegetation, would be eliminated from all interior lakes except Mukooda, a negligible or minor benefit to aquatic and wetland vegetation. Designating no-wake boating areas on some shallow, large bays on the major lakes could result in minor to locally moderate benefits to shoreline vegetation. Impacts to some types of wetland vegetation from completing the Kabetogama–Ash River trail or building boat launches would be similar to the modified proposed action, a minor impact parkwide. Increased funding and staffing could result in negligible to major benefits to native plants from early detection and elimination of exotics. No impairment to park vegetation is expected. | However, parkwide impacts to vegetation from any development proposed by this alternative would be negligible or minor, and no impairment to this resource is expected.<br>Impacts to upland and aquatic vegetation from at-large mooring by houseboats, turbidity from motorized boat use and from wave action or physical collision would be the same as in alternative 1 and the modified proposed action. Severe localized and minor to moderate parkwide impacts to vegetation would be possible without increased attention to the control of exotic plants, although the development and enhancement of educational programs could mitigate this somewhat, and no impairment to park vegetation is expected. |

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| **Water Quality / Water Resources** | Dissolved oxygen or nutrient levels in the large lakes is affected in negligible amounts by human waste washing in from undeveloped sites, remaining pit toilets, and graywater from houseboats. Houseboats moored for long periods in shallow bays could have minor to moderate localized adverse impacts on dissolved oxygen or nutrient levels. Failing septic systems on property adjacent to Rainy Lake (and presumably other large lakes) add to this impact. Oil and grease standards for drinking water could be exceeded at times on the large lakes from motorboat exhaust emissions, fueling stations, or even snowmobiles; some individual measurements indicate these standards have been exceeded. The impact to the large lakes is unknown, with potential for minor or moderate impacts. Incidental releases of MTBE from motorboats are also possible, although no standard would be exceeded. The potential for moderate to major parkwide water quality impacts from PAH contamination released during combustion in motorized watercraft exists. It does not appear that PAH contamination or releases of oil or gas from motorboats, have impaired water quality, although further testing for the presence and/or impacts from either is needed. Snowmobiles, particularly on Kabetogama Lake, could have substantial cumulative effects on oil and grease or PAH levels, but many unknowns preclude analysis. Snowmobiles might also increase ammonium or sulfate levels in park lakes. Impacts related to dam construction and operation on the large lakes could be reduced with the implementation of the International Joint Commission's 2000 order; minor to major benefits to hydrology could result. | Similar to alternative 1 except if the proposed houseboat management plan required graywater to be contained, minor to moderate localized benefits, and negligible parkwide benefits, to water quality could result. Increased water taxi service, boat rentals, and tour boat services on the park's four large lakes would result in a negligible addition of fuel and PAHs, compared to alternative 1. Additional benefits to park hydrology could result under this alternative through monitoring and forming a partnership with entities charged with the management of border waters. No impairment of the park's water quality resources is anticipated. | Similar to the modified proposed action except houseboats would have to contain graywater and there would be negligible benefits to interior lakes from prohibiting motorized use. Establishing no-wake boating areas could reduce fuel emissions and the accumulation of discharged petroleum products along shorelines, with a possible negligible to moderate benefit to localized water quality. Eliminating boat rentals on Mukooda Lake could remove a minor impact to water quality from fuel discharged from rental boat engines. No impairment of the park's water quality resource is anticipated. | Similar to the modified proposed action except adding a fixed-wing aircraft zone along the developed part of Kabetogama Lake would add a further, negligible amount of fuel from spills during refueling or leakage during on-the-water operations. No impairment of park water quality is anticipated. |

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| **Fisheries** | The major walleye sportfishery in Rainy, Namakan, and Sand Point Lakes has been fished above target levels for the majority of the last 15–18 years, and in Kabetogama Lake for 6 of the last 15 years. Before 1985 walleye were also heavily harvested by commercial fishermen. Walleye and northern pike populations have also been adversely affected by managed lake levels, causing reduced reproductive success in both species, particularly in the Namakan basin. Predatory fish (such as walleye and pike) also show high levels of mercury, which have unknown pathological and/or reproductive effects, and along with other coldwater fish species, they may be adversely affected by temperature and oxygen level changes resulting from global climate changes. Other pollutants, including PAHs from motorboat exhaust, are also likely present in the lakes. The concentration of either is unknown, but lakes with similar or less motorboat use have PAH levels that are considered above those where observable toxic effects to fish occur.<br>The combination of these factors could have major adverse effects on the sportfishery. However, creel surveys indicate sport harvests remain relatively high, perhaps indicating the cumulative impact is not major, or that impacts are mitigated through closures, slot limits, creation of spawning habitat, and changes in water levels. Future additional changes in the hydrologic regime in the park's large lakes should stabilize reproductive success and sportfishery populations further. If mitigation measures continue, if sportfishing pressure does not increase beyond what the fishery can withstand, and if water level management returns to near natural conditions, this apparent ability of the lake's | Impacts from sportfishing, managed lake levels, and pollution would have the same minor adverse effects as described in alternative 1, with the potential for moderate to major impacts if current mitigation failed. Under the modified proposed action cooperative efforts with other agency managers and an emphasis on reestablishing natural, self-sustaining populations of native species could benefit the park's native fisheries, but the degree of benefit is unknown and could range from a negligible to a major positive impact. No impairment to park fisheries is anticipated. | Same as the modified proposed action except designating no-wake boating areas could result in negligible to major benefits for fish in those areas. No impairment to the park's fisheries is anticipated. | Same as the modified proposed action. |

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| **Fisheries (cont.)** | sportfishery to maintain harvests beyond researchers' expectations could continue indefinitely. Therefore, no impairment of the park's fishery resource is anticipated. | | | |
| **Wildlife** | Logging in the park before it was established, combined with fire suppression, has altered wildlife habitat to favor species in mature second-growth forests. Continued logging in adjacent forests may create openings and shrubby growth used by moose, deer, snowshoe hares, porcupines, beavers, wolves, and several other species. The extent of this change is unknown, but presumed to be a major one parkwide because of major changes in the abundance and distribution of vegetative species. Development in southern transitional boreal forest in and outside the park might exacerbate this effect, although the park's contribution to habitat loss through development, including from additional campsites, trails, or facilities, is negligible.<br>Wildlife in the park and in the region are also adversely affected by human activity or intrusion into otherwise relatively undisturbed habitat; such effects can be severe on individuals, family groups, or nesting colonies. The adverse effects of disturbance can add to existing stressors, such as water level fluctuations, mercury contamination, poor weather, or predation, to result in reproductive failure for individuals or colonies of waterbirds, for example. Mitigations such as area closures or changes in water level regimes could minimize the extent of this impact. In this context the additional impact of continuing at-large camping is probably not large enough to be measurable (i.e., negligible). Aquatic and fish-eating wildlife would experience minor to major benefits from efforts to return lake levels to | Reestablishing fire as a natural ecosystem process to the extent possible would result in minor benefits to native species that require recently disturbed or open areas, including canopy openings in mature forests.<br>If overnight use at undeveloped areas continued, impacts to wildlife would be the same as alternative 1. Stopping use at these sites would mean human disturbance in otherwise relatively undisturbed wildlife habitat would cease, resulting in minor to major localized benefits to wildlife. The benefits to wildlife of fewer developed sites would likely be offset by spacing them to achieve privacy goals, resulting in a net minor to moderate impact to lakecountry wildlife compared to existing conditions and similar to alternative 1. If an overnight permit system was determined feasible and appropriate, minor to moderate benefits for lakecountry wildlife could result from education and generating fee revenues. Creating and using 15–20 visitor destination day use sites could result in negligible to moderate impacts to wildlife at those sites.<br>Development, including the Kabetogama–Ash River trail, would result in the removal of habitat and the displacement of wildlife. Noise during construction and human use of the trail could temporarily disturb and displace wildlife. If animals were occupying unique habitat, such as some of the wetland types the trail would necessarily traverse, impacts to individual animals or family groups could be severe. However, impacts to wildlife parkwide would be negligible or minor, and wildlife resources along the | Park policies to reestablish fire as a natural ecosystem process to the extent possible would result in minor benefits to native species requiring openings in forest canopy, and/or mature pine forests compared to alternative 1.<br>Limiting overnight use to developed sites and minimizing shoreline development would reduce the frequency and intensity of human disturbance and leave the most shoreline habitat open to wildlife use of any alternative. Restoring undeveloped sites would recreate habitat. The combination could have major benefits for individual animals, minor to major benefits for lakecountry wildlife, and negligible to minor benefits to park wildlife overall. Educating campers in developed areas could have a negligible to minor benefit for wildlife in these areas. Minimizing the number of developed sites and leaving relatively long stretches of shoreline free from camping would have moderate to major benefits for lakecountry wildlife sensitive to the presence of humans. Paddle-in sites might result in major localized impacts to wildlife, although these impacts could be avoided through careful siting. Visitor destination sites might result in temporary disturbance of wildlife.<br>As described for the modified proposed action, development, including the Kabetogama–Ash River trail, would remove habitat and displace wildlife. Noise during construction and subsequent human use of the trail could temporarily disturb and displace wildlife. If animals occupy unique habitat, such as some of the wetland | Fire management policies would have negligible benefits to wildlife compared to alternative 1 because fire would be used to improve visitor experience rather than wildlife habitat.<br>Closing undeveloped sites to all but day use or houseboat visitors would result in a possible moderate or major local benefit for wildlife compared to alternative 1 but same as alternative 2. Density of developed sites and resulting impacts to wildlife would be similar to those described for alternative 1. Educating visitors when they obtained a permit for overnight use could have negligible to minor benefits for wildlife, the same as the modified proposed action. Use of areas in the vicinity of paddle-in sites could have major localized effects on wildlife; education on low-impact camping could help reduce these impacts.<br>Impacts of development, including expanded visitor centers and the Kabetogama–Ash River trail, would result in negligible or minor impacts, similar to the modified proposed action.<br>Some park wildlife in and adjacent to the area where commercial fixed-wing aircraft would take off and land on Kabetogama Lake would experience moderate to major impacts if there were 30–40 flights per day. Waterbirds, including colonial nesting birds and loons in particular, could suffer major adverse effects on individuals or family groups. It is not likely, however, that the park population of any wildlife species would be significantly harmed or impaired by this or any other action in alternative 3. |

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| **Wildlife (cont.)** | conditions closer to those occurring under natural conditions.<br>Full build out of ~400 campsites sites along the lakeshore would mean that few or no long stretches of shoreline would be free of humans. To some species more wary of humans this could be a minor or moderate impact throughout the entire shoreline of the park's large lakes. In some cases, establishing campsites or a campground has a negligible benefit on wildlife attracted to human activity. A minor impact to bears from increased human conflicts is expected.<br>Recreational use can have localized or even parkwide adverse effects on wildlife throughout the lakecountry due to noise, passive disturbance from the presence of boats or humans, or the destruction of habitat by wave action. These effects could be moderate to major localized impacts, or minor to moderate impacts to shoreline species throughout the lakecountry.<br>Despite the potential for more severe localized impacts, no impairment of park wildlife populations is expected. | trail route would remain unimpaired.<br>If visitors in motorized craft voluntarily reduced speeds or noise, or avoided areas where nesting birds or other sensitive wildlife reside as a result of information in park brochures, there could be minor to major positive impacts on these local populations, and a negligible to minor benefit to wildlife parkwide.<br>No impairment of park wildlife populations is expected. | types the trail would necessarily traverse, impacts to individual animals or family groups could be severe. However, parkwide impacts of the trail on wildlife would be negligible or minor.<br>Designating no-wake boating areas would have positive impacts on wildlife sensitive to noise, and adverse impacts on species threatened by slow-moving boats. Some small benefit from a reduction in wave erosion of overhanging bank or sensitive wetland vegetation in no-wake areas would be possible. Closing all lakes except Mukooda to fixed-wing aircraft use could have major localized and temporary benefits for wildlife at these lakes, and a negligible benefit to park wildlife overall.<br>Nonmotorized use of backcountry lakes by small boats and canoes might be adversely affecting loon reproduction, as loons nesting in areas without frequent human disturbance expend significantly more energy escaping when they are disturbed. Discontinuing the boats-on-interior-lakes program could have negligible to moderate benefits on loon reproduction on these lakes.<br>No impairment of the park's wildlife resources from implementing actions in this alternative is anticipated. | |
| **Species of Special Concern** | No impairment is anticipated to bald eagles, wolves, lynx, or other protected species. | No impairment is anticipated to bald eagles, wolves, lynx, or other protected species. | No impairment is anticipated to bald eagles, wolves, lynx, or other protected species. | Assuming the use of adequate buffers, no impairment is anticipated to bald eagles, wolves, lynx, or other protected species. |
| **•Bald Eagles** | Cumulative impacts to bald eagles appear to have moderately affected relative productivity. This situation shows signs of improving and may continue to improve to levels comparable to other nearby public lands. Full build out of ~400 developed sites could have negligible to major impacts on eagles nesting along the shores of the park's large lakes through increased energy expenditures or nest relocation. In the park snowmobile | Impacts on bald eagles would be similar to alternative 1 except fewer developed sites would be established. | Impacts on bald eagles would be similar to alternative 1. However, because alternative 2 includes the least lakeshore development and lowest potential for human disturbance from day use, overnight use, or speeding motorboats, there could be negligible to minor benefits for bald eagles in the lakecountry. It is unknown whether no-wake boating areas would benefit or adversely affect eagles. | Impacts on bald eagles would be similar to alternative 1. However, the use of commercial fixed-wing aircraft on Kabetogama Lake could have severe impacts on 10% of the park's eagles with nests in this area, and moderate impacts on another 27% whose nests lie near it or along a flight pathway to the Chain of Lakes. Overall, this is a possible moderate or major adverse impact on the park's bald eagle population. However, if buffers around |

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| •Bald Eagles (cont.) | access to nests in the early spring and the presence of stationary or slow-moving watercraft near nests or in foraging habitat could be significant contributors to adverse impacts on bald eagle productivity. Toxins, including DDEs and PCBs, may be contributing to lowered productivity, and mercury may be adversely affecting the ability of eaglets to survive. The management of water levels in the park similar to natural, pre-dam conditions could provide some benefit to eagles by improving the condition of the fishery. | | | nests of at least 300–600 meters were imposed, these impacts might be substantially reduced. Increased use of fixed-wing aircraft on Kabetogama Lake might also disrupt feeding by white pelicans. |
| •Wolves | Wolves also appear to be vulnerable to impacts from humans, primarily from direct mortality of individuals in packs whose territories include the park. Although changes to wolf and deer habitat from logging and fire suppression may also have had substantial influences on population numbers, the extent is unknown. The removal of habitat as a result of development has not and would not have more than a negligible impact on wolves in and adjacent to the park under alternative 1. Although snowmobile use of the Chain of Lakes trail on the Kabetogama Peninsula may have had moderate or major adverse effects on some park wolves by opening the area to human use, mitigation in the form of closing bays on the major lakes to snowmobile traffic has presumably offset these impacts. Alternative 1 would result in no additional impacts on wolves. | Creating the Kabetogama–Ash River trail would have negligible or minor impacts on wolves using the area around Daley Bay. These impacts would not occur from human disturbance, but from providing travel corridors for humans and wildlife, resulting in possible inter-specific or intra-specific competition between coyotes and wolves, or between wolves in different packs. | Impacts on wolves would be the same as the modified proposed action. | Impacts on wolves would be the same as the modified proposed action and alternative 2. |
| •Lynx | If a lynx population exists in the park, packed snowmobile trails increase the ability of competitors to access lynx habitat or prey, indirectly reducing the population. The use of existing snowmobile, skiing, and hiking trails in the park may also disturb or scare away lynx. Alternative 1 would result in the addition of up to 48.6 miles (79 km) of | The Kabetogama–Ash River trail could provide access by coyotes and bobcats into territory otherwise occupied by lynx. These species are competitors with lynx, and coyotes prey on them as well. If lynx exist in the park, the trail could have an unknown adverse impact for these reasons. | Same as the modified proposed action. | Same as the modified proposed action and alternative 2. |

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| •Lynx (cont.) | new trails, which if located in boreal transition forest, could remove lynx habitat. The occasional use of these trails might also disturb lynx. The degree of impact compared to existing conditions is unknown and could be negligible to moderate. | | | |
| •Pelicans | | | Under alternative 2 negligible impacts to feeding pelicans could result from establishing no-wake boating areas. | |
| •Other Species | | Negligible to major localized and negligible parkwide impacts to snapping turtles and northern bog lemming from building the Kabetogama–Ash River trail could occur. | Same as the modified proposed action. | Same as the modified proposed action and alternative 2. |
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| **Archeological Resources** | The limited park program to identify and evaluate significant cultural resources would continue on a project-by-project basis as funding allowed, resulting in only negligible to minor impacts parkwide. The current park monitoring program would be limited in identifying archeological resource impacts in a timely manner at both developed and undeveloped sites, and insufficient park funds would delay needed treatment and stabilization measures. While there would be a potential for moderate to major localized impacts, area closures until funding and staff were available for stabilization would effectively reduce parkwide impacts to negligible or minor levels. No impairment to archeological resources would result under alternative 1. | The limited park identification and evaluation program would result in only negligible to minor impacts parkwide, similar to alternative 1. An overall reduction in the number of sites developed and in visitation levels at selected areas would be beneficial. While the types of localized impacts would be similar to alternative 1, the overall frequency would likely be reduced. A monitoring program for undeveloped areas, combined with a public education program to encourage use at developed sites, would also be beneficial in both proactively reducing the potential for impacts to archeological resources at undeveloped sites and for detecting early signs of visitor-related impacts. No impairment to archeological resources is anticipated. | Similar to alternative 1, the limited park identification and evaluation program would result in only negligible to minor impacts parkwide. The overall reduction in the number of sites developed, the elimination of overnight use at undeveloped sites, and limiting overnight use party sizes would be beneficial. Similar to the modified proposed action, limited access to sensitive archeological sites would also be beneficial in reducing visitor-related impacts. While the types of localized impacts would be similar to alternative 1, the overall frequency would be significantly reduced. No impairment to this resource is anticipated. | The project-by-project inventory and evaluation of resources would result in only negligible to minor impacts parkwide, similar to alternative 1. Eliminating overnight tent use at undeveloped sites would be beneficial to unrecorded archeological resources by reducing the frequency of visitor-related impacts. While increased overall visitation levels would usually increase the likelihood of moderate to major localized impacts, a monitoring program would serve to reduce their frequency. No impairment to archeological resources is anticipated. |
| **Historic Structures** | Retaining and preserving 21 properties, along with protecting ruins in their present state, would be beneficial to the overall management of structures. Removing a limited number of properties with potentially eligible structures would have major localized impacts to selected structures; however with required mitigation it would have only minor impacts parkwide. Continuing current partnerships with | Similar to alternative 1, retaining and preserving 16–20 identified properties, along with protecting ruins, would be beneficial; however, there would be major localized impacts on a limited number of properties where potentially eligible structures would be removed. With appropriate mitigation, the removal of selected structures would have minor impacts parkwide. Alternative solutions to structure manage- | This alternative would result in a more focused approach to the management of historic structures, with emphasis on preservation over visitor use, interpretation, or adaptive reuse. Though standing structures would suffer less visitor-related impacts, there would also be less opportunity for visitor education and appreciation. This alternative would result in the preservation of a significantly higher | This alternative would emphasize visitor access and result in the preservation of the same number of properties as alternative 1. Removing a limited number of properties with potentially eligible structures would have major localized impacts; however, with required mitigation it would have only minor impacts parkwide. Attention would be given to alternative solutions to managing structures, including |

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| **Historic Structures (cont.)** | other organizations and agencies would be beneficial overall to the preservation of structures within the park. The continued adaptive use of structures for park operation and interpretive needs would also be beneficial because they would receive routine maintenance and monitoring. Modifications of individual structures would result in moderate localized impacts, but only negligible impacts parkwide. Continued public access and use of current visitor destinations would be beneficial overall, but visitor use would result in some minor localized impacts to resources. No impairment to historic structures would result. | ment and use would be beneficial overall. Depending on individual rehabilitation plans, this would result in moderate localized impacts, but negligible impacts parkwide. Access restrictions to sensitive cultural resource sites would be beneficial in reducing visitor-related impacts. No impairment to historic structures is anticipated. | number of historic properties through a greater variety of partnerships and alternatives. Emphasizing preservation over reuse would also significantly reduce the number of moderate localized impacts stemming from individual rehabilitation projects. No impairment to this resource is anticipated. | public/private partnerships and adaptive use. Access to select historic resources would be allowed. While adaptive reuse and visitor access to resources would have negligible impacts parkwide, they would also result in moderate to major localized impacts to individual resources. Enhanced visitor use and interpretation would also be beneficial, as it would increase awareness and appreciation of the park's resources. No impairment to historic structures is anticipated. |
| **Cultural Landscapes** | Protecting six cultural landscapes from inadvertent damage or destruction would be beneficial as it would maintain their integrity and provide for their enjoyment and appreciation by visitors. The continued absence of cultural landscape planning documents would further complicate comprehensive planning and development initiatives in the park. This would result in minor to moderate localized impacts to individual landscapes; however, the impacts would be negligible parkwide. No impairment to cultural landscapes would result under alternative 1. | Increased maintenance and monitoring programs for all landscapes, as well as the development and implementation of management plans for selected landscapes, would be beneficial to preservation and subsequent management. No impairment to cultural landscapes is anticipated. | Better overall management of cultural landscapes through increased maintenance and monitoring would be beneficial parkwide. The emphasis on preservation over development would help ensure that landscapes retained their integrity and setting for future generations. No impairment to this resource is anticipated. | Any future implementation plans for individual landscapes would provide much needed guidance in managing visitor use and preserving those landscapes. Even though this alternative emphasizes increased visitor development, the implementation of individual plans and a more comprehensive management approach would be beneficial in significantly reducing impacts to landscapes both individually and parkwide. No impairment to cultural landscapes is anticipated. |
| **Collections** | The management of collections under this alternative would be beneficial as new acquisitions would proceed at a more manageable rate, commensurate with park staffing to properly record and curate objects. Impacts resulting from the lack of adequate access to collections would be negligible. No impairment to collections is expected. | Collection management would be beneficial as new acquisitions would proceed at a more manageable rate commensurate with park staffing to properly record and curate objects. Increased access to collections would also be beneficial in allowing for further research and dissemination of information, as well as creating support and awareness among the public for the importance of collections. No impairment is anticipated. | Same as the modified proposed action. | Broadened acquisition guidelines and increased access to and education about the park's collections would benefit both the public and the collections. However, this approach would require additional funding and staff for accessioning, conservation, and educational media development. While increased accessions would burden curation and conservation resources, impacts to collections overall would be negligible. No impairment is anticipated. |

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| Ethnographic Resources | Greater visitor use of areas with ethnographic resources could lead to the degradation of these resources. However, no impairment to ethnographic resources is expected. | Same as alternative 1. | Same as alternative 1. | Same as alternative 1. |
| Fire Management | Fire management activities could inconvenience visitors but would not affect or substantially impair visitor experiences. | Same as alternative 1. | Same as alternative 1 except visitors could be inconvenienced to a slightly greater degree under this alternative. | Same as alternative 1. |
| Visitor Use and Facilities | No impairment to visitor experience is expected. | No impairment to visitor experience is expected. | No impairment to visitor experience is expected. | No impairment to the visitor experience is expected. |
| PARKWIDE MANAGEMENT | | | | |
| •Overnight Permits / Facility Use Fees | Improved collection of visitor data by means of a no-fee permit system for overnight use would provide quantifiable yet fairly limited visitor use information for making informed park management decisions. | The need to obtain no-fee overnight permits would inconvenience some users, who could no longer enjoy the same degree of spontaneity and freedom for overnight use of the park. Improved collection of visitor data by means of a no-fee permit system for overnight use would provide limited visitor use information, the same as alternative 1. The potential establishment of facility use fees would be the subject of a feasibility study. | The need to obtain an overnight permit/reservation would inconvenience some users, and permit costs might discourage use by some visitors. Improved collection of visitor data with an entry and overnight permit/reservation system would make available the most comprehensive visitor use data of any alternative. Management decisions could more appropriately respond to visitor needs, improving visitor experiences over the long term. | Improved collection of visitor data by means of fee/reservation system for overnight use would generate additional park funding but limited visitor use information (the same as alternative 1). If determined feasible and appropriate, an entry/user fee system would result in the park collecting comprehensive visitor use data (the same impacts as alternative 2). |
| WATER MANAGEMENT AREAS | | | | |
| •Overnight Houseboat Use | An unlimited number of houseboats would continue to be allowed to moor overnight in park waters, benefiting houseboaters. However, the absence of a houseboat quota would not ensure balanced, long-term, in-water uses, possibly adversely affecting the experiences of other park visitors. | Through a no-fee permit system, an interim limit of 60 houseboats per basin (a park total of 120) would help ensure future balanced in-water uses and allow for some expansion from current use. Houseboat users might find it difficult at times to obtain permits, especially during peak periods. Since houseboats would not dominate in-water uses, the experiences of other park visitors could improve. Developing a houseboat management plan, with public input, would help ensure that future decisions about houseboat management addressed user needs, as well as overall visitor experience concerns. | Through a permit system, a quota of 50 houseboats per basin (park total of 100) would help ensure future balanced in-water uses, but would slightly reduce existing commercial use and possibly private use, with the least houseboat use of any alternative. Use limits would generate some adverse impacts to visitor experiences parkwide for houseboaters, particularly if use levels increased. Houseboat users, especially those who own private watercraft, might find it difficult to obtain permits, especially during peak periods. Since houseboats would not dominate in-water uses, other park visitors' experiences could improve. | Through a permit system, a quota of 70 houseboats per basin (a park total of 140) would help ensure future balanced in-water uses and allow for some expansion. Houseboat users, especially those who own private watercraft, might find it difficult to obtain permits, especially during peak periods. If the quota was reached, houseboats could potentially dominate recreational activities, resulting in adverse impacts to the experiences of other park visitors, but potentially less than in alternative 1. |

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| •Fixed-Wing Aircraft | Fixed-wing aircraft use would continue on seven interior lakes, providing access to remote areas for a small percentage of visitors. | Continuing fixed-wing aircraft use would have the same impacts as alternative 1. | Eliminating all commercial and most private fixed-wing aircraft use on interior lakes (except Mukooda) would limit options for a small percentage of visitors. | Same as alternative 1 plus expanding commercial fixed-wing aircraft use near the Kabetogama community would allow for greater opportunities to transport park visitors into remote areas of the park. |
| •Special Use Zone | Continuing the special use zone for special events but no longer permitting radar runs would inconvenience some users. | Requiring events in the special use zone to meet certain terms and conditions could inconvenience some users. Other users, however, would appreciate the fact that special events would have to be compatible with the purpose and significance of the park. | Even though the special use zone would be removed in this alternative, people could apply for special use permits, as long as they met the park's management policies. | Same as alternative 1. |
| **LAND MANAGEMENT AREAS** | | | | |
| ***Developed Area***<br>•Visitor Centers | More crowding of the Ash River and Kabetogama visitor centers and the Crane Lake ranger station would adversely impact visitor experiences, particularly at Crane Lake. Inadequate parking at all visitor centers and crowded park access roads would diminish the visual quality of park entries. Some visitors would have to walk ¼ to ½ mile to reach the water, causing temporary, adverse impacts during peak visitation periods. | Year-round visitor center operations at Rainy Lake, expanded hours at the Kabetogama and Ash River centers as needed, and a multi-agency visitor center at Crane Lake would provide major benefits to visitors. Parking conditions at developed areas would be improved during peak periods by partnering with others to provide off-site parking areas and shuttle service, benefiting visitors as long as quality partnerships were created with adjacent communities, lodges, and public entities. | Year-round operations at all visitor centers and a multi-agency visitor center at Crane Lake would generate major benefits for visitors and provide greater access to information and programs than any other alternative. Partnering with others to provide additional parking and shuttle service would benefit visitors, the same as the modified proposed action. | Year-round operations at all visitor centers (the same as alternative 2), and expanded indoor and outdoor facilities at Ash River and Kabetogama Lake, plus a multi-agency visitor center at Crane Lake, would result in major benefits to visitor experiences, similar to the modified proposed action and alternative 2. Through partnering with others for additional parking and shuttle service, visitor frustration would be minimized, the same as the modified proposed action and alternative 2. |
| Lakecountry Area<br>•Day and Overnight Use Sites | Developing an estimated 186 additional day and overnight use sites (~400 total), with 40% of the shoreline at high density (subarea 1), allowing continued use of undeveloped sites, and permitting large groups would accommodate a range of visitors and more use. However, greater levels of activity, noise, and social encounters would also adversely impact visitor experiences. | Developing an estimated 86–108 additional day and overnight use sites (280–320 total), with only 20% of the shoreline at high density (subarea 1) and possible continued use of undeveloped sites, would accommodate an increase in overnight visitation, even though less than alternative 1 or perhaps 3. Developed sites would be dispersed, affording users a greater sense of separation and seclusion, unless nearby undeveloped sites were used. Limiting group sizes to 30 persons would accommodate fairly large groups while retaining a quality visitor experience. Partnering to provide appropriately sized camping facilities for large groups outside the | Developing 36–61 additional day and overnight use sites (250–275 total), with only 20% of the shoreline at high density (subarea 1), and restricting all overnight camping and houseboat mooring to developed sites would accommodate the fewest number of overnight visitors over the long term. Day use visitors would be adversely affected to a moderate degree by eliminating day use at overnight sites. Fewer overnight and day use options would inconvenience visitors, who would need to reserve sites, but the adverse impacts to the visitor experience because of activity, noise, and social encounters would be less than any other alternative. However, the | Developing up to 186 additional day and overnight use sites (~400 total), with 40% of the shoreline at high density (subarea 1), would accommodate significant increases in overnight visitation. This alternative would provide the most houseboat sites and slightly fewer tent sites than alternative 1. Eliminating lakecountry tent camping at undeveloped sites and day use at overnight campsites would help improve visitor management and reduce human noise (the same as alternative 2). However, tent campers might find it necessary to reserve a site ahead of time during peak use periods. Establishing a permit or reservation system would bene- |

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| •Day and Overnight Use Sites (cont.) | | park would benefit these user groups. | level of spontaneity and freedom in selecting a site that best suits the needs of visitors would be diminished. | fit visitors by providing a means of locating a developed overnight use site. Visitors would no longer be able to enjoy the same degree of spontaneity and freedom in selecting sites. |
| •Fires and Firewood | Permitting fires at developed and undeveloped day and overnight use sites (in metal fire rings or previously established rock rings) would continue to be convenient for visitors. Allowing the gathering of dead and down firewood would generate localized adverse impacts to visitor experiences due to environmental degradation over the long term. | Permitting fires in metal fire rings only at developed day and overnight use sites would result in localized adverse impacts to visitors, especially for day users seeking undeveloped or developed sites after 2 P.M. and wanting to build fires. Negative impacts to day users would be minimized since the development of day use sites would be a high priority. Allowing visitors to gather dead and down firewood would generate localized adverse impacts, the same as alternative 1. Encouraging visitors to bring their own firewood would reduce these impacts. | Limiting fires to metal fire rings only at developed sites would have effects the same as the modified proposed action. Prohibiting the gathering of dead and down firewood would generate the greatest positive impacts to the visitor experience by helping retain a quality campsite environment; a few visitors who came without firewood or liquid fuel campstoves would be inconvenienced. | Impacts to the visitor experience of limiting fires to metal fire rings at developed sites would be the same as the modified proposed action. Allowing the gathering of dead and down firewood would generate localized adverse impacts, the same as alternative 1. |
| •Visitor Destination Sites | Developing only a few destination sites for visitors to participate in interpretive programs would limit opportunities for visitor education related to park resources. | Developing 15–20 visitor destination sites would afford greater opportunities to interpret park resources, with benefits to visitors parkwide. | Developing 10–15 visitor destinations would afford opportunities to interpret park resources, with more benefits than alternative 1, but less than the other alternatives. | Developing 15–20 visitor destinations would have the same impacts as the modified proposed action. |
| •Backcountry Trail Areas | An additional 48.6 miles of trails for nonmotorized use would result in major benefits to visitors. However, the majority of trails would be on the Kabetogama Peninsula, and trailheads would only be accessible by water. Park guests without boat access would continue to have limited options for exploring the park's interior, resulting in fewer recreational opportunities for these visitors. | An expanded nonmotorized trail system that includes an additional 48.6 miles of summer hiking trails and ~26 miles of winter trails would result in major benefits to visitors and local residents by providing a comprehensive trail system on the Kabetogama Peninsula and extending the existing network. The Kabetogama–Ash River trail would link primary destinations on the mainland, a major benefit to visitors without access to boats. | An expanded nonmotorized trail system with ~33 miles of additional summer hiking trails and ~26 miles of winter trails (Kabetogama–Ash River trail system) would be a major benefit to visitors, as described under the modified proposed action. However, additional trails on the Kabetogama Peninsula would not be constructed, providing visitors with less access to interior areas, but allowing greater opportunities for a primitive area experience. This alternative would provide the fewest hiking options of any alternative. | An expanded nonmotorized trail system that includes an additional 80.8 miles of summer hiking trails and ~26 miles of winter trails (in and outside the park) would result in the most opportunities for backcountry trail experiences, benefiting visitors to the greatest degree of any alternative. Trails on the Kabetogama Peninsula would be the same as alternative 1, and on the mainland the same as the modified proposed action. |

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| **Noise and Remoteness** | Continuing to allow motorized uses on seven interior lakes and commercial fixed-wing aircraft service to Shoepack Lake and the Kettle Falls Hotel would result in temporary and localized adverse impacts to qualities of remoteness and seclusion for a small percentage of visitors, but negligible adverse impacts parkwide. Fixed-wing aircraft use would provide access to some park guests who might not otherwise be able to access interior park areas. Providing up to a total of ~400 day and overnight use sites, allowing large group sizes (72 people), and permitting continued use of undeveloped sites would result in an undetermined level of adverse impacts to the natural quiet and feelings of remoteness. | Adverse impacts to remoteness from motorized uses on seven interior lakes would be the same as alternative 1. Providing up to a total of 280–320 day and overnight use sites, limiting large group sizes (30 people), and potentially eliminating the use of undeveloped sites would result in positive impacts to natural quiet and feelings of remoteness. The benefits would be greater than alternative 1 or 3, but less than alternative 2. | Designating no-wake boating areas and eliminating motorized use on seven interior lakes (except Mukooda) would generate positive localized impacts to qualities of remoteness and seclusion for a small percentage of visitors, but negligible benefits to the visitor experience parkwide. Providing up to a total of 250–275 day use and overnight sites, restricting use to developed sites, and limiting large groups sizes (18 people) would result in major benefits to the natural quiet and feelings of remoteness, the most of any alternative. | Expanded commercial fixed-wing aircraft use on Kabetogama Lake would generate an undetermined amount of noise and result in unknown temporary and localized adverse impacts to the natural quiet of neighboring lakeshore areas. Adverse impacts to natural quiet and remoteness from motorized uses on seven interior lakes would be the same as alternative 1 and the modified proposed action. Providing up to a total of ~400 day and overnight use sites, allowing large groups (72 people), and permitting use of undeveloped sites by houseboaters and primitive area users would result in minor localized impacts to natural quiet and remoteness in lakecountry areas. However, discontinuing overnight tent camping at undeveloped sites in the lakecountry would help maintain a greater degree of natural quiet than under alternative 1 and possibly the modified proposed action. |
| **Safety** | Opportunities for education related to boating etiquette and safety would be limited; conflicts between visitors enjoying motorized and nonmotorized uses would continue. Unsafe conditions of the Moose Bay portage and the Mukooda Lake portage/truck route would continue, making for hazardous snowmobile travel and localized adverse impacts. | Expanded opportunities for education related to boating etiquette and safety through programs and partnerships would benefit all user groups and likely diminish conflicts between various in-water user groups.<br>Rerouting and consolidating snowmobile trail segments on the Mukooda Lake portage/truck route and the Moose Bay portage would benefit a large volume of winter users. | Same as the modified proposed action. | Same as the modified proposed action. |
| **Concessions** | Continuing concession contracts would benefit a broad range of visitors. | Continuing concession contracts would benefit contract holders, park visitors, and the National Park Service. The possible expansion of a few visitor services would meet additional visitor needs. | Same as the modified proposed action. | Same as the modified proposed action. |

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| | During shoulder seasons at the Kabetogama Lake and Ash River visitor centers, and during shoulder and winter season at the Crane Lake ranger station, park visitors would not be able to obtain needed information due to limited operations. Inadequate contacts with park staff and poor dissemination of information would limit opportunities for visitor education and understanding of the park's mission, purpose, and significance. No educational institute or similar entity would afford opportunities for visitor education and interpretive programs. | Expanding seasons and hours of operation at visitor centers (as needed), cooperatively providing a multi-agency center at Crane Lake, developing an educational institute, implementing an entry and overnight reservation system, and adding staff and funding would improve contacts between park visitors and staff and enhance visitor experiences. As a consequence, interpretive programming that emphasizes the park's mission, purpose, significance, plus opportunities for visitor education and understanding of park resources, would be available to more visitors. | Park contact and information dissemination would be improved by providing year-round operations at visitor centers, cooperatively providing a multi-agency center at Crane Lake, developing an educational institute, and adding staff and funding. Benefits to visitors would be slightly greater than under alternative 1. Limiting the interpretive focus to critical resource issues would educate visitors about specific park concerns, possibly at the expense of emphasizing the broad range of interpretive themes. | Benefits to visitors would result from year-round visitor center operations, an educational institute, and a multi-agency visitor center at Crane Lake, the same as alternative 2. Visitor opportunities for education would be enhanced to the greatest degree of any alternative by providing expanded indoor and outdoor visitor center space at Kabetogama Lake and Ash River and an environmental education center at Ash River. |
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| **Staffing** | Developing additional facilities, such as trails, ~400 day and overnight use sites, and visitor destinations, as well as implementing a no-fee permit system for overnight use, would result in significant increases in responsibilities for current park employees. Without additional staffing, workloads would increase. Maintaining and operating existing and new facilities would require park staff to rely more heavily on volunteers over the long term. | Developing additional facilities, regular monitoring, expanded programs, implementing a no-fee permit system for overnight use, and potentially establishing facility use fees would result in significant increases in staff responsibilities. However, additional staffing would improve the efficiency of park operations, and mitigate adverse impacts to park operational workloads. | Similar to the modified proposed action except there would be additional staff responsibilities. | Similar to alternative 2. |
| **NPS Operations and Facilities** | Inadequate work and storage facilities would continue to generate adverse impacts for efficient park operations. | Rearranging some operations and developing some additional maintenance facilities in the Namakan District, as well as developing additional facilities at Crane Lake and Kettle Falls, would improve park operations. | Same as the modified proposed action. | Similar to the modified proposed action except work and storage facility improvements (including the Ash River operations area in the Namakan District) would result in the greatest positive impacts of any alternative. |
| **Partnerships** | Existing partnerships would provide limited opportunities for cooperatively addressing management issues and concerns. | Expanded partnerships with public and private organizations would afford more opportunities to use the expertise of resource managers, recreation specialists, and service providers. Increased communications with neighboring land managers would offer greater potential to develop common strategies for resource protection and recreational opportunities, with major positive impacts. | Same as the modified proposed action. | Same as the modified proposed action. |

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| | Continuing the present course of action would have minor negative economic and social effects on tourist development outside the park because park staffing would be insufficient to meet the growing and changing demands of park visitors and partnering groups. Other economic and social effects would be insignificant.<br>Providing additional day and overnight use sites in the lakecountry would create more recreational opportunities for visitors, possibly increasing visitor use and associated expenditures over the short term. However, overuse could adversely affect the quality of park resources and reduce use over the long term. | Creating a comprehensive program of exhibits, displays, publications and other educational tools would foster tourism and aid businesses in the gateway communities.<br>Slight positive effects on the area's economy and relations between the community and the park would result from proposed activities for cultural resources management, visitor facilities, visitor education, and park operations.<br>If interim houseboat limits resulted in fewer houseboats in the park, there could be an adverse economic impact on local businesses that supply goods and services to those users. However, that impact would not be significant on the overall economy of the gateway communities. Possible facility use fees would be examined in a feasibility study. | Creating a comprehensive program of exhibits, displays, publications and educational tools would foster tourism and aid businesses, with a slight positive effect on the area's economy and community relations (the same as the modified proposed action).<br>Some negative effects on the region's economy could result if park usage was reduced somewhat by implementing fire management policies; limiting the number of overnight houseboats; providing the fewest developed day and overnight use sites; and discontinuing group camping, motorized use (including fixed-wing aircraft use) on interior lakes (except Mukooda Lake), the boats-on-interior lakes program, overnight use at undeveloped sites, and at-large camping in primitive areas. Quotas for commercial and private houseboats might have an adverse impact on community cohesion. User fees are not expected to have a measurable effect on the regional economy after the first two years. | Similar to the modified proposed action, except under this alternative there would be a slightly positive effect on the regional economy and relations between the community and the park because more visitors could be accommodated, and there would be opportunities for longer stays. Quotas for commercial and private houseboats might have an adverse impact on community cohesion, but not to the extent of alternative 2. It cannot be determined if limitations on the number of private houseboats would have an adverse economic effect. An overnight use fee and possible entry/user fees are not expected to have a measurable effect on the regional economy after the first two years. |

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## Chapter Three

# *The Affected Environment*

## 3

Introduction
Natural Resources
Cultural Resources
Visitor Use and Facilities
Interpretation, Visitor Services, and Education
Park Operations, Facilities, and Partnerships
Regional Social and Economic Environment

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# INTRODUCTION

## OVERVIEW

The purpose of "The Affected Environment" is to discuss park resources in enough detail that readers can understand environmental impacts that might occur should the modified proposed action or another alternative be selected for implementation. Its primary purpose is to focus on "affected" resources, rather than to fully describe the park or show how the park's resources are unique. However, each section may include some background information to provide the reader a more complete understanding of park resource and how they would be affected by the selected general management plan alternative.

## WILDERNESS

In 1992 the National Park Service recommended a total of 127,436 acres of lands and waters for wilderness designation, including 2,442 acres of potential wilderness additions. This amounts to 58.4% of the park or 98.9% of the area that met initial wilderness qualifications. Areas proposed as wilderness are administered so as not to impair their suitability for eventual designation. They are managed for the long-term protection of wilderness character and values until Congress takes action.

Only nonmotorized recreation is permitted within proposed wilderness areas. The proposed wilderness area includes the majority of wilderness qualities that make Voyageurs unique in the national park system — a land surface shaped by glaciation into an endless system of internal waterways, with a sense of vastness that is reinforced by a continuous forest mantle interrupted by bogs, beaver ponds, streams, sandy beaches, and rocky cliffs. This primitive landscape offers numerous recreational opportunities for backpacking, hiking, canoeing, kayaking, fishing, cross-country skiing, nature study, and photography.

The National Park Service released a *Final Environmental Impact Statement for a Wilderness Recommendation* in May 1992, which was signed by the Director of the National Park Service. The National Park Service forwarded the *Wilderness Recommendation* to the Secretary of the Interior, where it awaits further action. The alternatives considered in this document treat all proposed wilderness areas as wilderness and anticipate the final resolution of wilderness issues as a future action. All actions proposed in this document, as well as all subsequent implementation plans, will be consistent with NPS wilderness policy requirements.

The National Park Service may take no action that would diminish the wilderness suitability of an area recommended for wilderness designation until the legislative process has been completed. Until then management decisions about recommended wilderness will be made in expectation of eventual wilderness designation (*Management Policies*, "Wilderness Preservation and Management," section 6.3.1, 2001).

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# NATURAL RESOURCES

Voyageurs National Park lies within the lake country along Minnesota's northern border with Ontario, Canada, which is known as the Border Lakes region. It is part of a relatively pristine ecosystem of 2.7 million acres that includes the 1.2-million-acre Boundary Waters Canoe Area Wilderness to the southeast and the 1.1-million-acre Quetico Provincial Park in Ontario to the east. The ecosystem to which the park belongs is classified as a subsection of the Northern Superior subplains section, Laurentian mixed forest province (MDNR Web site 1999).

The bedrock that underlies Voyageurs is some of the most ancient in North America, yet the landscape throughout the region is quite young, the product of glaciers that receded less than 10,000 years ago. Glaciers shaped the topography of the park into rolling hills and a complex system of lakes and waterways. Land elevations are rarely more than 100 feet above the major lake elevations, while the eastern and southern sections can be 200 to 300 feet above the lake level. The park is heavily forested, primarily by conifers and aspen. While it is dominated by flora and fauna common to boreal forests, it shares some physical qualities of neighboring ecosystems and is in a biogeographic "edge" zone, where many southern and northern plant and animal species are at the farthest extent of their respective ranges.

## GEOLOGY

Voyageurs National Park lies in the southern part of the Canadian Shield, which contains some of the oldest exposed rock formations in the world. More recently the bedrock has been shaped and carved by at least four periods of glaciation. The topography of the park is rugged and varied, with rolling hills interspersed between bogs, beaver ponds, swamps, islands, small lakes, and four large lakes. A thin layer of soil that developed since the last glaciation supports the boreal forest ecosystem.

The geologic history of Voyageurs National Park can be divided into two widely separated periods — the older Precambrian, or Archean, eon (greater than 2.5 billion years ago) and the Pleistocene epoch (less than one million years ago). The principal rock units are products of deep crustal processes whereby old sedimentary rocks were intruded by molten or igneous rocks. These sedimentary and igneous rocks were then subjected to tremendous heat and pressure found at great depths and converted to dense, recrystallized metamorphic rocks. Virtually all the rocks found in Voyageurs are metamorphic.

The metamorphic rock found in Voyageurs is part of a much larger area called the Superior Province of the Canadian Shield (craton), the oldest part of the North American continent and covering much of Canada east of the Canadian Rockies. The Canadian Shield is divided into several provinces. The Superior Province extends south from northern Quebec, covering much of Ontario and part of Manitoba and extending south to southwestern Minnesota, northeast South Dakota, and eastern North Dakota.

Most of the old sedimentary rocks were formed 2.7 to 2.8 billion years ago on an ancient sea floor. These sediments included mud (clay), silt, and sand up to pebble- and cobble-sized material. This material, along with the solidified lavas and intrusive igneous rocks (such as gabbros and granites), was metamorphosed into rocks called schists, gneisses, quartzites, and metaconglomerates. The rocks exposed in Voyageurs show a remarkable progression of rock types from schists and gneisses in the west and central portions (Rainy Lake and Kabetogama Lake) to granite on the east end (Namakan Lake and Sand Point Lake). A transition or blending between the schists and the granite occurs as rock with swirls and bands known as migmatite. The granite is part of a large body of rock known as the Vermilion Batholith.

About 2.1 billion years ago renewed activity resulted in the injection of igneous mafic (dark colored) dikes, which are better exposed outside the park, southwest of Kabetogama Lake. From the early Proterozoic eon (Proterozoic X, approximately 1.8 billion years ago) to the Pleistocene was a long period of erosion, which exposed much the bedrock we see today.

The second "phase" of geologic activity that left an indelible imprint on the rocks at Voyageurs is the advance and retreat of the glaciers during the last one million years or so. The entire area was covered by continental glaciers beginning about 190,000 years ago up to about 11,400 years ago with warm interglacial periods between. The glaciers carved out the lakes and established the drainage patterns present today. Since the Voyageurs area was out near the terminus of the glacial advance, very little morainal material (glacial debris and till) remains. Instead, the area has been scoured, leaving the exposed barren rock with marks of glacial activity, such as grooves and striations, and areas of thin residual soils.

The western end of the park contains thicker sequences of glacial deposits, as well as lakebed deposits from Lake Agassiz. This post-glacial lake covered much of the present area of the park from about 11,400 to about 9,500 years ago. Deposits of silt and clay may be as thick as 50 feet. Since the glaciers retreated, the surface has been rising at a rate of about 1.3 cm/year.

## CLIMATE

A cool, wet climate prevails in the Border Lakes region today, while there are some differences along east-west and elevation gradients. In the eastern end of the region the climate is moderated by the Great Lakes, in particular Lake Superior. Air is progressively drier and colder in the winter and warmer in the summer as one moves from east to west across the park. Winters are long and cold, summers short and warm, with moderate precipitation and strong seasonal changes. The weather in the region and in the park is highly variable, being affected by the continental polar air mass from the north, streams of warm moist Gulf air from the southeast, and drier, warmer air from the Rockies to the west.

International Falls holds the record for both the greatest annual range of temperatures in the region (152°F), and the greatest monthly range (114°F for March). Temperature changes of 50 to 60°F within a few days occur in most years (Heinselman 1996).

The average daily high temperature in July is 78°F, although summer days can be hot and humid (National Weather Service 2000). Temperatures during July and August can reach 85 to 90°F, with humidity ranging from 65% to 95%. These "hot spells" are broken by episodes of clear, dry, and cool arctic air, which can turn drizzly with temperatures in the 50s for several days.

Wind direction is primarily from the southwest in the spring and summer, from the northwest in the winter, and from the southeast during August, September, and October (NPS 1979, 1994a).

The frost-free season for International Falls averages 107 days (June to mid-September), and fall freeze-up begins in late October on smaller lakes and mid November on larger ones. Ice cover is established on virtually all lakes and streams in the park by late November. Depending on winter temperatures and snow cover, late winter ice thickness varies from 15 to 30 inches. Spring breakup occurs anytime from mid April to late May, with an average date for ice-out near May 1.

Annual precipitation (rain and snow) averages 25–28 inches in the park, and increases from west to east. The major source of precipitation is moist air from the Gulf during the summer, when about 40%–45% of precipitation falls and most lightning occurs. Another 20%–25% of the annual precipitation in the park falls as rain in the shoulder months of May and September. Average snowfall ranges from 55 to 70 inches, but is highly variable. As with rain, there is less snowfall in International Falls than in other areas to the east. The first measurable snowfall occurs by late October in most years, and the last in late April or early May. Water content of snow is quite low, as snowfalls occur well below freezing. Spring snowmelt releases an average of 3 to 6 inches of water, mostly in April.

## AIR QUALITY

Voyageurs National Park is one of 48 units of the national park system designated as a mandatory class I area. These areas are afforded the greatest degree of air quality protection under the Clean Air Act, and the National Park Service is required to do all it can to ensure that air quality related values (including flora, fauna, soil, water and visibility) are not adversely affected by air pollutants. To this end, NPS personnel review any permit applications for industrial or other facilities that want to locate or expand nearby and that may contribute to the deterioration of the airshed.

### INFLUENCES ON AIR QUALITY

Nearly all increases in air pollutants described below are a result of human activity, and come from both mobile and stationary sources. The particular sources most responsible for affecting regional air quality are identified below in each subsection.

### VISIBILITY

Visibility is adversely affected by very fine particulates, organics, and aerosols of nitrates and sulfates. Sources of the components of haze near the park include paper and pulp mills, taconite (iron ore) mining and smelting, power plants and mobile sources (cars, snowmobiles, motorboats). Because a 1991 analysis of "air mass back trajectories" by Gebhart and Malm shows air to the south of the park is often associated with poor visibility conditions in the park, all larger industrial sources in the region south of the park were mapped by the NPS Air Resources Division. Several emit at least 10,000 tons per year of a combination of suspended particulates, nitrates, sulfates, and volatile organic compounds. U.S. Steel and Minnesota Power Boswell emit 20,000 and 50,000 tons per year, respectively. One of the closest industrial sources to the park is the Boise Cascade mill in International Falls. It emits an average of 1,000 tons per year of these substances; however no correlation was found between westerly winds and poor visibility in the park (NPS 1999g).

### OZONE AND OTHER CRITERIA POLLUTANTS

The Environmental Protection Agency sets federal air quality standards for allowable emissions for several pollutants considered harmful to public health or the environment, including six principal or "criteria" pollutants. The Ontario Ministry of the Environment and Energy sets standards for the Canadian side. Many of these pollutants, named above as contributors to haze, are regulated individually. In addition, some (nitrogen oxides and hydrocarbons) combine to form ozone in the presence of sunlight, and others (particulate sulfates and particulate nitrates) combine to form "smog."

Ozone monitoring in the park since 1988 suggests a statistically significant decreasing air quality trend for ozone of about 0.5 parts per billion (ppb) per year (based on May to September daily maximum ozone concentrations for 1988–97). However, average 8-hour ozone concentrations in the park were 68 ppb (based on average of the 4th highest daily maximum 8-hour ozone concentrations, 1996–98), which is below the most recently proposed EPA primary 8-hour ozone standards of 85 ppb (NPS 1999g).

Air quality in the International Falls / Fort Frances area is generally good, and no standard except that for total reduced sulfur (the "rotten egg" or "cabbage" odor associated with pulp mills) is regularly exceeded. Even though the mills may not be a significant contributor to reduced visibility in the park (see above), they do apparently affect other aspects of air quality, as this odor is noticeable under certain weather conditions at the Rainy Lake visitor center, 12 miles to the east (park staff, pers. comm. July 1999). Support for the idea that a plume from the mills may be reaching and affecting park air quality comes from a study of lichens. Researchers found that all 17 elements, including sulfur, measured in four lichen species over three years decreased with distance from the mills and then began to increase closer to the park (Bennett and Wetmore 1997). This is apparently not unusual for plume behavior, but it has implications for park visitors, vegetation, and wildlife, as concentrations of sulfur were much higher than natural background levels in the lichens tested inside the park (Bennett and Wetmore 1997).

### PARTICULATES

Pulp and paper mills, including those in the International Falls / Fort Frances area, are also producers of all three types of measured particulates (Ontario Ministry of the Environment 1998): large particulates that settle as dust, inhalable particulates (2.5 to 10 microns), and aerosols (smaller than 2.5 microns), the latter of which contribute to haze or reduced visibility (as noted above, see page I-126).

Forest fires may also add particulates, as well as small amounts of dioxin, although data are contradictory and unclear on the latter. A draft report completed by the Environmental Protection Agency in 1991 found trace amounts of dioxin in soot from residential fires, but made no definitive conclusions on whether forest fires are a source.

### REGIONAL AIR QUALITY CONCERNS

#### Mercury

Fish and wildlife in Voyageurs National Park show elevated levels of mercury. This is true even in comparison to nearby Superior National Forest. The source of mercury is most likely atmospheric and originates some distance away from the park (Sorensen et al. 1990).

Fossil fuel combustion may be particularly important. Studies indicate each 1,000 megawatt (MW) coal-fired power plant adds on average 1000 kg of mercury per year to the atmosphere (Glass et al. 1986). Several large coal-fired power plants exist in northeastern Minnesota, and the 800 MW Atikokan (Ontario) coal-fired power plant is operating (although at a level lower than originally proposed) 60 miles to the east-northeast of the park (Hennefelman 1996). The mining and processing of iron ore (taconite) into pellets uses explosives and is known to release mercury into the air. Several such operations are ongoing south of the park (Sorensen, pers. comm. 1999; NPS unpublished data).

Annual wet mercury deposition has shown an increase of 0.60 µg/m²/yr for the years 1990–95 in the upper Midwest (Glass and Sorensen 1999). Although this trend was reflected near the park in both International Falls and Ely, these two monitoring locations had the lowest levels of mercury of all six stations monitored, indicating a decreasing trend from south to north in the region studied (Glass and Sorensen 1999).

### Acid Precipitation

Unpolluted rain or snow has a slightly acid pH of about 5.0 (Schindler 1988). Precipitation with a pH lower than this has been acidified by air pollutants, usually sulfur dioxide and nitrogen oxides. These gases are emitted from the burning of petroleum products (such as coal, fuel oil, or gasoline) by power plants; by cars, trucks, and aircraft; and by oil refineries, copper-nickel smelters, paper and pulp mills, and taconite mining operations. Sulfur dioxide, which forms sulfates or sulfuric acid in the atmosphere, is the primary emission implicated in acidified precipitation (Schindler 1988). Although coal-fired power plants and taconite mining contribute to the acidification of rain and snow that falls in the park, sources from much farther away, including Wisconsin, Texas, Alberta, Missouri, and Manitoba, were all found to contribute more than 5% of sulfate deposition at Ely southeast of the park in 1980 (Heinselman 1996).

Wet sulfate, which falls during rain or snowstorms from air polluted with sulfuric oxides and is responsible for much of the acidification of lakes in this region, was high enough (11 kg/ha) that it would have caused problems for aquatic species in the 1970s and 1980s (Kepner 1987). It is much lower now (5–6 kg/ha; NADP 1995, 1996), consistent with a statewide decrease in sulfate emissions during this same period (MPCA 1997). The measured pH of rain and snow shows a similar trend toward neutrality in the area of the park (NADP 1995, 1996; Heinselman 1996). Although occasional episodes of lower pH precipitation occur, acid rain and snow are not considered a problem inside the park at this time (Strassman, pers. comm. 1999). This is not true to the east, however, where acid precipitation continues to fall over much of the northeastern U.S. and is considered responsible for fish kills and the reduction or disappearance of some amphibians (NADP 1995, 1996).

### GLOBAL WARMING

Increased levels of carbon dioxide and other "greenhouse gases" that trap and change light into infrared radiation are believed to potentially be raising the earth's temperature very slowly. Voyageurs National Park is in a unique transitional zone at the southern end of the boreal forest. It would take only slight changes in overall temperature averages to change the makeup of the park's forests and associated wildlife.

## SOILS

### SOIL FORMATION

For the most part, soils in the park are no more than 10,000 years old and formed after the most recent retreat of the glaciers. Glacial scouring and prolonged erosion produced sandy loam tills, lacustrine (lake formed) deposits, and localized outwash deposits of sand and gravel that are the parent material of soils in the park today (USGS 1999). When they retreated, the glaciers left behind a topography of rolling hills and poorly drained lowlands, with lakes, swamps, and rivers. Very fine sediments settled in the bed of Lake Agassiz to form clay sediments up to 30 feet thick in some cases. In other parts of the park the glacial lake swept soil clean through wave action to leave rock bare.

### SOILS IN THE PARK TODAY

Generally, three types of parent material from glacial and lake deposits converge in the park — those from Lake Agassiz in the west, glacial tills high in calcium ("calcareous") from the south, and tills low in calcium from the east (NPS 1992). Soils in the park range from thin, loamy, and well-drained types on uplands to thick, clayey, and poorly drained soils in lower lying areas (USGS 1999). Because they have had only a few thousand years to form, soils in upland areas are relatively thin.

Soils that originate from granitic bedrock sources are coarse-textured, acidic, infertile, and do not hold water well. These types of soils are characteristic of ridgetops or upland areas in the park (NPS 1979, 1994). Fine textured soils from the Cloquet and Taylor soils series are predominant throughout the park on forested uplands. They are composed of basic, igneous rock and reddish-brown, noncalcareous till (NPS 1979). Till from metamorphic sedimentary rock, such as schists and greenstones, are finer textured, higher in nutrients, moderately acidic, and better able to hold water. They occur on more level upland, forested areas in the park (NPS 1994a). Many of these are sand or silt loams.

The most fertile soils in the park are associations of calcium-containing lacustrine clays and organic materials (primarily peats) in the Indus and Taylor soils series that occur in depressions and at lower elevations (NPS 1979). These soils are fine grained, neutral or slightly alkaline, high in nutrients, and able to retain water (Heinselman 1996). Deposits can be much thicker than upland soils, and they can vary from inches to several feet thick, particularly in depressions or the base of slopes. Swamps and lowland area forests grow on these soils (NPS 1979). In some cases, very rich glacial Lake Agassiz deposits support unusual southern species of plants unable to survive in the more sterile, acidic soils of the park (NPS 1994a).

On the southwest end of the park glaciers deposited tills higher in calcium-rich limestone than those in the rest of the park. Rivers draining these areas feed into Kabetogama Lake, giving it a distinctive water chemistry from the park's other large lakes (Payne 1991).

Soils ideally suited for building or other use would be those that are relatively deep, well-drained, and fertile, with high shear strength and low potential for shrinking or swelling when wet, however, few soils in the park meet these criteria (Lewis 1973). Most are shallow, relatively recently deposited soils that have low levels of nutrients and high acidities, and that are susceptible to erosion and shrink and swell. Because the underlying bedrock is nearly impermeable, these thin soil layers present challenges to development, including wastewater treatment through septic systems (Lewis 1973; Weeks and Andrascik 1998).

### INFLUENCES ON SOILS

Soils in the park area have been removed to build visitor centers, cabins, park roads, parking areas, and other facilities. Historically, they have been modified by logging practices, including building logging roads, slash burning, and removing tree roots (thus loosening soil). Soils have also been affected by clearing for tents, and by trampling from campers, hikers, and other recreational users (Reaume 1983; Cole and Landres 1995). Specific impacts to soils from these activities have included the loss of the surface organic horizon, compaction, reduction in porosity and infiltration rates, and increases in erosion (Cole and Landres 1995). Many of these effects have been noted in the park at designated and undesignated camping sites (Reaume 1983). An estimated 1,000 sites in the park have been used at one time or another for tents, fire rings, cabins, or other day or overnight activities (NPS 1988b).

## VEGETATION

### UPLAND VEGETATION

The park lies in a transition zone or ecotone between the "northern hardwoods" zone of cool temperate and mostly deciduous forests to the south, and the conifer dominated boreal forests to the north (Coffman et al. 1980; Pastor and Mladenoff 1991). The boundary of this vegetative community runs eastward from northern Minnesota through northernmost Wisconsin and upper Michigan (Daniel and Sullivan 1981; Pastor and Mladenoff 1991). Species diversity in the transition area is surprisingly great, and nearly 700 species of vascular plants have been identified.

The diversity of species is important to the functioning of the south boreal forest ecotone. Patches of conifers contribute different levels of nutrients and create different soil types than hardwoods. Species composition in boreal forests is controlled primarily by fire, but in hardwood forests, wind is a more important factor (Pastor and Mladenoff 1991). Where these forest types overlap, wildlife, wind, fire, and activities such as logging can result in the return of hardwoods where pines were cut, or boreal forest species where wildlife preferentially browse on young hardwood saplings.

Boreal forests are less productive (that is, they grow more slowly) than northern hardwoods by about 30% to 60% (Pastor and Mladenoff 1991). This is primarily a result of a limited supply of nitrogen, which spruce and fir retain in their needles. Microorganisms cannot readily decompose these needles, so nitrogen is tied up in leaf litter for a much longer time in boreal forests than in northern hardwood forests. When fire burns these forests, it releases the nitrogen back into the soil (Heinselman 1996). Hardwoods may then have an advantage, as they are able to utilize nitrogen more quickly than boreal species (Pastor and Mladenoff 1991). Plant-eating wildlife, such as moose, beaver, and snowshoe hare, complicate the relative abundance of tree species by feeding preferentially on young hardwoods, as these trees contain fewer distasteful carbon compounds intended to defend against browsing. This preferential browsing can shift the composition of some sections of forest toward boreal vegetation (Pastor and Mladenoff 1991). Local climate and specific moisture conditions are also important in determining whether a patch of boreal or hardwood forest will grow. Where the climate is warm enough to support northern hardwoods, boreal stands occupy wet or cool microsites, and where it is cool, boreal forest dominates (Pastor and Mladenoff 1991).

In the park boreal forest species are most abundant, occupying about 70% of the park's vegetated area (Weeks and Andrascik 1998). Dominant forest types range from quaking aspen, birch, and mixtures of pines to white and black spruce and balsam fir. Quaking aspens are particularly widespread and are part of vegetative associations in about 50% of the park's land area (USGS 1999). Minor representations of hardwoods, including bigtooth aspen, red maple, elm, and black ash are also present (Coffman et al. 1980).

Researchers (Kurmis et al. 1986, Coffman et al. 1980) have identified five to six separate upland plant communities in the park that vary based on soil depth, moisture, texture, and nutrient availability. These communities were greatly refined into more specific vegetative associations in compiling the results of a recent survey (USGS 1999). While some cover types such as scrub oak, red pine, or the ash/elm association only occupy a narrow range of sites with specific soil moisture and nutrient conditions, others such as aspen, white pine, and paper birch are distributed over a wider range of site conditions. The upland forest communities most widespread in the park include aspen/paper birch (19% of the park's land area), spruce/fir/aspen (14% of the park's land area) and jack pine/aspen mosaic (6% of the park's land area; USGS 1999).

Although not identified as a distinct vegetative community by Kurmis or Coffman, the nearly treeless lichen-dominated community is common in Voyageurs on the crests and upper slopes of bald bedrock ridges in forest openings (Heinselman 1996). Some 400 taxa of lichens have been collected in the park (Wetmore 1981).

### AQUATIC AND WETLAND VEGETATION

While not as common as upland forests, bogs, marshes, swamp forests, and wetlands are abundant in the Border Lakes area (see Wetlands Inventory map). In the park about 20,000 to 27,000 acres (8,100 to 11,000 ha) are considered wetlands (USGS 1999). The park's wetlands are important communities for several reasons. They have the greatest diversity of plant and animal species of any vegetative assemblage (Weeks and Andrascik 1998); most of the park's unusual or unique vegetative communities are wetland communities (NPS 1998c); and with few exceptions all rare or protected plant species in the park occur in wet or low lying areas (NPS 1998c). Minnesota's "peatlands" (swamp forests, bogs, and fens) are also significant simply for their extent — over 6 million acres and more than any other state except Alaska (MDNR 1999a). Even though the full significance of the peatlands has yet to be understood, they are at a minimum a huge water reservoir. Examples of unique wetland communities in the park include leatherleaf/sweet gale shore fens, northern bur oak mesic forests, white cedar/mixed conifer or tamarack swamps, and wild rice marshes (NPS 1998c). Protected plant species are discussed under "Species of Special Concern."

### PHYTOPLANKTON

Phytoplankton are single-celled plants (algae and diatoms) that live in water. They are eaten by microscopic animal life (zooplankton), as well as by many species of aquatic invertebrates and fish. The concentration of phytoplankton is measured by the chlorophyll α concentrations in lakes (see "Water Quality") and is related to the productivity of fish and other aquatic organisms.

Although all the large lakes experience higher concentrations of plant plankton at times during the summer, Kabetogama is notable in supporting a massive growth of blue-green algae from mid June to September. The bloom is dominated by one species *(Aphanizomenon flos-aquae)*, which typically blooms in water receiving high levels of phosphorus, such as runoff from fertilized agricultural areas (Kepner and Stottlemyer 1988).

This same species dominates a less concentrated bloom on Sand Point Lake, while diatoms are most abundant in Namakan and Rainy Lakes during the summer (Payne 1991). In Kabetogama Lake (and shallow Black Bay in Rainy Lake), summer plant plankton populations are ten times as concentrated as in Rainy, Sand Point, and Namakan Lakes (Payne 1991).

### MARSHES AND SHORELINE VEGETATION

Interfaces between land and lakes are some of the most diverse, dynamic, and complex habitats in the park (Weeks and Andrascik 1998). Marsh vegetation in the park is most abundant at the edge of lakes (Kurmis et al. 1986). Marsh and shoreline (or littoral) vegetation, which occurs from the shore to depths where light still penetrates to the bottom, are used by many species of fish, birds, and other wildlife to live and rear young (Wilcox and Meeker 1992).

### BOGS, MARSHES, AND SWAMP FORESTS

A continuum of wetland types exists in the park and in the region, varying along gradients from wet to dry, and from nutrient rich to nutrient poor (Larsen 1979). Peatlands (including bogs, fens, muskegs, or swamps) occupy wet, lower lying areas; they can be vegetated by trees, shrubs, or sphagnum moss. Muskegs are nutrient poor and very wet sites that are usually vegetated with shrubs and sphagnum moss. Fens are peatlands that receive water both from precipitation and groundwater that has percolated through mineral soil; they look like watery meadows, and the water supply of a fen is often higher in minerals and other nutrients and is less acidic than a bog (MDNR 1999a). Bogs are fed from groundwater and runoff from nearby uplands. Because they are less nutrient rich and more acidic, fewer species grow in them. The organic material produced in bogs and muskegs accumulates over time and fills in open water, leading to bog forests of black spruce and tamarack, and eventually to swamp forests populated with white cedar or black ash (Daniel and Sullivan 1981; Kurmis et al. 1986; Larsen 1979).

### FACTORS AFFECTING VEGETATION

The transitional forest varies in its response to disturbances such as fire, windthrow, or logging. For instance, if the disturbance covers a large area, such as a fire with no firebreaks, a large windthrow, or clearcut logging, trees requiring a seed source to reproduce (such as red or white pine) will be unable to return (Swain 1981). Instead, trees that reproduce from root suckers, such as aspen and birch, will be favored. The intensity of fire also determines which trees will return. Summer fires, or those burning after an extended period of fire suppression and fuel accumulation, are hot enough to kill nearly all seeds and leave only mineral soils; spring fires are less intense. The former favors birch and conifers that are able to regenerate in soils with little organic component, and the latter promotes both seed and sucker regeneration (Pastor and Mladenoff 1991). In hardwood forests windthrow, and the creation and filling of small treefall gaps, are more important forces than fire in determining changes in species composition (see below).

#### Logging

Logging and associated fire control from as early as the 1880s until 1972 has had a major influence on the forests in the area of Voyageurs National Park (NPS 1989). Survey notes indicate that jack pine, aspen, birch and spruce, as well as red and white pine, were preferred by logging companies until these species became difficult to find or less economical to harvest. These trees were cut over large enough blocks that a significant proportion of the stock of red and white pine seed sources in some areas of the park has been lost (NPS 1989). Species compositions have changed over large areas of the park as a result of logging. Although aspen and paper birch forests remain abundant, red and white pine forests are rarer, and white spruce and balsam fir more numerous (NPS 1989; USGS 1999). Complex mixed forests cut on sites with deeper, more nutrient rich soils are now primarily pure or predominantly aspen (NPS 1994a).

#### Fire and Wind

Fire cycles for different forest types in the southern transitional boreal forest vary widely. Because needles are not readily decomposed, litter builds and burns easily in the boreal forest. Jack pine/spruce forests have severe crown fires of 10,000 acres (4,050 ha) or more about every 50 years, while aspen/birch/fir forests have similar fires every 80 years (Heinselman 1996). White and red pine forests have light burns every 20–40 years under natural conditions that remove the understory, and crown fires at 150–180 year intervals that open the canopy (Swain 1981; Pastor and Mladenoff 1991). In many cases the frequency of fires in the boreal forest is shorter than the life span of the trees. This, in combination with adaptations that these species have developed to either withstand or regerminate after a fire, means the same species often continues to occupy the site (Heinselman 1996; Pastor and Mladenoff 1991).

In northern hardwood forests smaller fires, windthrow, and treefall all tend to create smaller gaps in the canopy, which are filled with different age trees or different species. As noted above, herbivores in the south boreal ecotone can keep these sapling hardwoods from maturing through selective browsing, resulting in boreal species returning instead (Pastor and Mladenoff 1991).

Since the beginning of the 20th century, fire suppression has been practiced in most of the region (NPS 1989). Although large fires burned in the region an average of once every eight years before suppression (Heinselman 1996), only four have burned in the area of the park in this century (Coffman et al. 1980). Researchers believe the loss of pine forests resulted from the removal of a seed source through large-scale logging, combined with changes in soil and light conditions required for germination of any remaining seeds brought on by the suppression of natural fire cycles (Coffman et al. 1980).

### Exotic Vegetation

Voyageurs National Park has at least 71 exotic plant species that have invaded and likely displaced some of the park's native vegetation (Syzmanski, pers. comm. 2000). Most appear to have been introduced through vehicles, boats, pets, or other visitor-related means.

Nonnative invasive species of concern in the park include purple loosestrife, a wetland plant from Europe and Asia that has invaded park lakes, and Eurasian watermilfoil, another wetland species transported by boats and boat trailers that displaces native vegetation. Watermilfoil has not been observed in the park, but is a regional concern (park staff, pers. comm. 1999).

### Visitor Use

Hiking, camping, day use, and other recreational activities can crush, shear, or uproot vegetation. Plants can be killed outright or injured to such an extent that they are not as vigorous or that they reproduce less successfully (Cole and Landres 1995). Localized recreation areas characteristically have vegetation that is less abundant, have a different species composition, and have a different plant structure than undisturbed areas (Cole 1993). Heavy use of shorelines can alter flow regimes and eliminate the protective cover for fish and wildlife offered by overhanging banks. Ultimately, heavy use can increase sedimentation and turbidity in lakes or streams caused by runoff across denuded surfaces (Cole and Landres 1995). Nearly 90% of the campsites in the park have associated social trails, or unplanned trails created by visitors, resulting in cleared or destroyed vegetation. Visitors in the park have also cut trees for firewood, despite regulations prohibiting it. In a recent preliminary study, five or more cut tree stumps were found at 61% of the campsites monitored (Larsen et al. 1999). Vegetation and other resources were more severely damaged (more social trails, more area cleared, more cut trees per unit area) at small campsites on islands in the park (Larsen et al. 1999).

Snowmobiling can also damage shrubs and saplings, reduce vegetative standing crop, and change species composition (Cole and Landres 1995).

### Water Level Management

Unnatural lake levels have altered both the species composition and the structural nature of shoreline and marsh vegetation. The patchwork of low-growth, leafy, and thin-stemmed vegetation common in unmanaged lakes is much reduced in the park's large lakes (Wilcox and Meeker 1991). This diverse structure creates leaf surfaces for colonization and cover at all depths, and is more important to fish and wildlife than even the loss of certain species of aquatic vegetation, as they use various physical structures for shelter, cover, food, and egg-laying sites (Wilcox and Meeker 1991). The loss of this diversity has reduced macroinvertebrate density (Kraft 1988), with likely implications for wildlife and fish that feed on them.

### Beavers

Beaver have had a substantial influence on creating wetland communities in the park. Extensive fires and logging after the turn of the century resulted in a large supply of aspen on the Kabetogama Peninsula by 1940. This, the beavers' preferred food, in combination with a low density of wolves and hundreds of miles of stream channels available for colonization, led to an increase in dams on the peninsula from 71 in 1940 to 835 in 1986 (Naiman et al. 1988). Water impounded by beaver-created wetlands increased during this same period from 1% to 13% of the land area of Kabetogama Peninsula (Naiman et al. 1988). Beaver can have a dramatic influence on not only hydrology and riparian vegetation, but also on downstream nutrient recycling and vegetative community composition and diversity (Naiman et al. 1988).

## WATER RESOURCES / WATER QUALITY

### WATER RESOURCES IN THE PARK

Differences in bedrock types and resulting topography affect the physical features of waters in the park. The chemical composition of the rocks influences water quality, which in turn affects the aquatic environment for vegetation, plankton, aquatic invertebrates, fish, and eventually terrestrial birds and animals that use this environment or prey on species in it.

Nearly all the lakes and streams in the park owe their origin to the impact of glacial erosion and deposition (Heinselman 1996). Before the glaciers arrived, streams eroded the landscape, often along weaknesses in the resistant Precambrian granite such as bedrock fault lines, or an exposure of softer rock. The glaciers deepened these areas by gouging out easily fractured rock. As the glaciers retreated, they left sand, silt, and gravel in its meltwater which enclosed deep basins, often in a linear path as it retreated. These later filled with water and established a series of lakes joined by small streams (Heinselman 1996). Bogs and swamps formed where partially decomposed organic matter accumulated quicker than the rate of decay in lakes. Beavers also played (and continue to play) a significant role in creating ponds and wetlands (Naiman et al. 1988).

Lakes, swamps, and bogs dominate the landscape of the park. They cover approximately 50% of the area of the park, 96% of which is the combined surface area of the four largest lakes, Rainy, Kabetogama, Sand Point, and Namakan.

### VOYAGEURS NATIONAL PARK WATERSHED

Voyageurs National Park lies in the 14,900-square-mile Rainy Lake basin (38,600 square kilometers), which forms the headwaters of the Winnipeg River, which flows into Hudson Bay. This basin includes three watersheds that contribute to the park: the Rainy Lake headwaters, Vermilion Lake, and Rainy Lake. About 70% of the basin lies in Ontario and 30% in Minnesota (Weeks and Andrascik 1998). Like much of the park, the basin is characterized by thin soils, frequent outcrops of Precambrian rocks, and numerous lakes, ponds, and interconnecting rivers and streams.

Lake levels in the park's four largest lakes are controlled by a dam crossing the international border at Fort Frances and International Falls, as well as by small dams at Kettle Falls and Squirrel Falls on Namakan Lake. Rainy Lake is controlled separately from the Namakan Reservoir, which is a combination of the other three large lakes as well as Crane and Little Vermilion Lakes. The Namakan River, which enters Namakan Lake from the east, is the largest source of inflow to the park (Payne 1991).

The direction of flow through the four lakes is northwesterly, following a slope that averages 2 feet per mile. It is 56 miles (90 km) from the headwaters of the system (where Namakan River enters Namakan Lake) to the outlet of Rainy Lake at International Falls / Fort Frances. Summer water levels in Namakan Reservoir and Rainy Lake differ by a maximum of 8.5 feet (2.6 m). The average flushing rates calculated using both volume and discharge are 235 days for Namakan Reservoir and 359 days for Rainy Lake (Kallemeyn, pers. comm., July 1999). Water leaving Rainy Lake flows to the northwest in Rainy River to Lake of the Woods, which in turn flows to the Hudson Bay via Winnipeg River (Flug 1986).

The hydraulic conductivity of the Precambrian granite and metamorphic rocks in the park is low, and the Minnesota Department of Natural Resources considers them to be non-aquifers because so little groundwater exists. The inability of the bedrock or clay subsoils to conduct liquid also has implications for septic systems in the area, as leaching is confined almost entirely to the thin surface soils.

### PHYSICAL CHARACTERISTICS OF PARK LAKES

The physical characteristics of the park's large lakes are presented in table 8; all of the large lakes are classified as medium clarity. These features, as well as some not reported here (such as length and width, orientation to wind, amount and characteristics of inflow and outflow, and chemical features) determine many things about each lake, including the amount of light and oxygen, temperature, type and density of phytoplankton, and wetland vegetation, along with aquatic invertebrates, fish, and animals that depend on these resources for food or habitat. Some of these features also help determine the buffering ability of the park's lakes against acidified precipitation or whether atmospheric mercury washed into the lakes will be taken up in larger or smaller concentrations by its inhabitants.

The park's 26 interior lakes have a combined surface area of 3,157 acres (1,278 ha; Kallemeyn, pers. comm., July 1999). Many of the park's interior lakes, and all of the large lakes except Kabetogama, stratify, or form layers, along a thermal gradient in the summer. This can leave bottom layers stripped of oxygen (Payne 1991; Kepner and Stottlemyer 1988; Kallemeyn, pers. comm. July 1999). Although these lakes are less productive than the large lakes, the water in them is of high quality (that is, it is not turbid, is low in minerals, and does not support algal blooms).

### INFLUENCES ON HYDROLOGY

Although the park's four large lakes are naturally occurring, the lake levels have been artificially controlled for nearly 100 years. A hydroelectric dam crosses the natural outlet of Rainy Lake and spans the U.S./Canadian border. Electricity from the power plant and water from the reservoirs is used by two paper and pulp mills in Fort Frances and International Falls (Flug 1986). In addition, small dams operate at Kettle and Squirrel Falls on Namakan Lake (Weeks and Andrascik 1998). Lake levels are determined by the International Joint Commission (a joint U.S. and Canadian board). While the lake levels are beyond the scope of this document, the impacts of past and current systems of setting water levels (rule curves) are examined in "Chapter 4: Environmental Consequences" because they have had significant and cumulative impacts to park resources (Kallemeyn and Cole 1990).

The International Joint Commission is responsible for determining the appropriate lake level to meet several criteria in addition to power production and water supply, among them sanitation and recreation. Beginning in 1988 spring lake levels in Rainy Lake were held at the highest level allowable for May at the request of the Federal Energy Regulatory Commission in an attempt to increase walleye spawning success (Kallemeyn, pers. comm. July 1999). Changes recommended for Namakan Reservoir and Rainy Lake have been adopted and were implemented beginning in 2000 as a supplemental order.

195

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TABLE 8: PHYSICAL FEATURES OF VOYAGEURS NATIONAL PARK'S FOUR LARGEST LAKES

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|---|---|
| Rainy | 212,010 | 85,700 | 300 | 9.9 | 44 | 74 | 2,210.7 | 8,308 |
| Kabetogama* | 25,760 | 10,425 | 28.8 | 8.1 | 14.8 | 24.1 | 280.1 | 947 |
| Namakan | 25,130 | 10,170 | 44.5 | 13.6 | 19.5 | 31.4 | 384.4 | 1,379 |
| Sand Point | 8,880 | 3,590 | 38.5 | 12.0 | 8.7 | 14.0 | 114.2 | 432 |

Source: MDNR and OMNR, 1998.
NOTE: These figures include portions of these lakes outside the park.
*From Kallemeyn, pers. comm. July 1999.

Historically, regulation of the lakes has resulted in altered magnitude and timing of water level fluctuations, removing much of the natural hydrologic variability the lakes would normally experience (Weeks and Andrascik 1998). Under the previous order, the average annual lake fluctuations were 2.7 meters (8.8 ft) for Namakan Reservoir and 1.1 meters (3.6 ft) for Rainy Lake. This level of fluctuation is 0.9 meter (2.9 ft) greater than before the dams were built for Namakan Reservoir and 0.8 meter (2.6 ft) less for Rainy Lake. Lake levels have also peaked later (in late June or early July) than under natural conditions (late May or early June) and remained stable throughout the summer instead of gradually declining. This has had a major impact on the natural hydrology of the park. Under the supplemental order the allowable overall fluctuation on Namakan Reservoir is reduced to 2.0 meters (6.5 ft), water levels peak earlier, and a summer drawdown will occur. On Rainy Lake, the supplemental order widened the rule curve slightly in the spring, and there will be a modest late summer drawdown. Continued regulation of both reservoirs will maintain less than natural variability, however.

## WATER QUALITY

The waters of Voyageurs National Park are all designated by Minnesota as class A — outstanding resources exhibiting exceptional recreational and/or ecological values. These waters, as well as those feeding into them, are to be managed to prevent any degradation of their quality. No discharge of sewage, industrial, or other waste to lakes, streams, rivers, or wetlands that would deteriorate the park's current water quality is allowed.

While human sources of pollution affect the park's water quality to some degree, natural factors such as topography, bedrock, soils, the size of the watershed, rainfall patterns, inflow and outflow, wave and wind action, orientation, seasonal variations in temperatures, and other physical factors can all play a significant role in defining lake chemistry. Chemical and physical factors can then help define lake productivity, species composition, and health of aquatic or water-dependent wildlife.

### NUTRIENTS AND PRODUCTIVITY

Of the park's four large lakes, Kabetogama is the one considered most "eutrophic" or nutrient rich. Although this means it can support on average a higher density of plant and animal life, it also means its waters are not as clear as those considered high in quality. The productivity of lakes is directly related to the morphological features of the basin. Kabetogama Lake, which is relatively shallow, has a higher nutrient content than Rainy, Namakan, or Sand Point Lake. The difference between Kabetogama and the park's other large lakes is likely due in part to the geochemistry of the watershed it drains, which is higher in calcium carbonate. Concentrations of dissolved solids are about five times those measured in the Namakan River, which feeds Namakan Lake and is more typical of rivers flowing over the Precambrian shield bedrock. (Payne 1991; Rapp et al. 1985).

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Phosphorus is an important nutrient, and concentrations in Namakan, Rainy, and Sand Point Lakes are lower than in Kabetogama Lake. The relative concentration of phosphorus in these lakes is linked to whether they stratify during the summer. Phosphates readily sorb (attach) to particles or are taken up by plankton. The sinking of the heavier particles and plankton carry phosphorus down through the thermocline to the bottom sediments. As a result, a significant percentage of nutrients become lost to the water column and accumulate and bind to the bottom aquatic sediments. This process can have the greatest effect in restricting growth during July and August, when light and temperature conditions are otherwise at their best for primary (plant) productivity (Payne 1991).

Most of the interior lakes (all but two) are sharply stratified by August, reducing or eliminating mixing and resulting in the same loss of phosphorus from the water column through the adsorption of particles or uptake by plankton as described above. As a result, the interior lakes are not as productive (e.g., no algal blooms, less plankton and fish) as the large lakes in the majority of cases, but the water is less turbid and is of high quality for viewing or drinking. While phosphorus levels in most of the interior lakes are lower than in the park's large lakes, spring levels exceed the large lakes in some cases. Total phosphorus concentrations range from 0.003 mg/L to 0.031 mg/L. These values are comparable to Namakan, Sand Point, and Rainy Lakes, and lower than those for Kabetogama (which ranged as high as 0.05mg/L in the lake, and 0.07 mg/L in Sullivan Bay).

Nitrogen is another important nutrient that can be in many different forms in lakes — nitrate, nitrite, or ammonia. In Kabetogama Lake nitrate is apparently taken up by algae during summer blooms, and it was undetectable by August (coincident with a blue-green algal bloom) in one study (Kepner 1987). The ratio of nitrogen to phosphorus can influence the type of algae that occurs. In Kabetogama it is low, being consistent with that in lakes where there are blooms of blue-green algae (species which fix nitrogen from the atmosphere; Kepner 1987).

By measuring the concentration of chlorophyll "a", researchers have been able to tell where the park's lakes lie on a scale of eutrophic (high productivity) to oligotrophic (low productivity). A trophic state index of 0–40 indicates a lake is very low in productivity, and 51–100 is considered very high in productivity; 40 to 50 is intermediate. An increase of 10 on this scale represents a doubling of algal biomass. These values for the park's large lakes and large shallow embayments are shown in table 9. Trophic state indices of the interior lakes varied from 8 (in Locator and Cruiser Lakes) to 53, with 12 of 18 lakes tested under 40, or oligotrophic.

Kabetogama Lake also showed the highest summertime zooplankton density, nearly twice that of Sand Point or Rainy Lake, and three times that of Namakan Lake. The density of benthic invertebrates was found in one study to be about 2.7 times higher in Kabetogama than the other three lakes, which had roughly equal concentrations (Kraft 1988). During this period Kabetogama Lake also consistently had the highest catch of fish per unit effort (Kepner 1987).

**TABLE 9: TROPHIC STATE INDICES OF LARGE VOYAGEURS NATIONAL PARK LAKES**

| | | |
|---|---|---|
| Kabetogama Lake | 42–46 | 46–65 |
| Sullivan Bay | 45–46 | 64–65 |
| Rainy Lake | 36–50 | 39–57 |
| Black Bay | 49 | 60 |
| Namakan Lake | 34–46 | 32–46 |
| Sand Point | 42–50 | 36–54 |

Source: Payne 1991; Kepner 1987.

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## INFLUENCES ON WATER QUALITY

The park experiences no intentional direct discharge of sewage waste (blackwater) to its waters, but septic failures from systems operating on the thin soils and small lots on Crane, Sand Point, and Kabetogama Lakes are fairly common (Weeks and Andrascik 1998). Two-stroke engines in outboard motors also typically discharge approximately 30% of their fuel into the water (California EPA 1999). These same engines are used in snowmobiles, which may contaminate snow and conceivably aquatic environments when the snow melts. However, less research on the impact of snowmobile emissions on water quality is available (Hagemann and VanMouwerik 1999). The park uses double-walled fuel tanks and has booms to contain fuel leaks or spills from its fueling stations; many private fueling stations may not have taken similar precautions.

While park visitors use vault toilets at developed campsites, they can also spend the day or night at undeveloped sites without toilets. Human waste from developed and undeveloped sites is sometimes washed into lakes. One study at nearby Boundary Waters Canoe Area found coliform bacteria in water at canoe campsites with pit toilets to be significantly higher than controls (Weeks and Andrascik 1998). Many pit toilets at park developed sites in the lakecountry have been replaced with vault toilets (contained units that require pumping), and all remaining pit toilets in the lakecountry are scheduled for replacement in 2001 because of the potential for contamination. Houseboats are not prevented from disposing of graywater (non-toilet wastewater) directly into the lakes. Blackwater (toilet wastewater) is not an allowable discharge. Visitors are sometimes also responsible for garbage and other solid wastes washed into park waters; one study at Boundary Waters Canoe Area found an average of 3 pounds per person per year discarded (NPS 1994a).

Sources of human-caused impacts to water quality coming from the region can include increased sediment loading related to soil erosion from upstream logging on private, state, and U.S. Forest Service lands, as well as increases in hydrogen sulfide, ammonia, and soluble organic compounds. Also, there is local biological oxygen demand (BOD) from the ongoing decomposition of logs in Hoist Bay inside the park as a result of a pre-park logging operation (Sproul and Sharpe 1968). Historically, small-scale mining has also occurred within what is now the park, and it continues in northern Minnesota and Ontario. Leachates could enter the park waters if mining operations occurred within the park's watershed (Weeks and Andrascik 1998).

One study of water quality found occasional exceedances of EPA standards for drinking water or the protection of aquatic life (Payne 1991). The drinking water standard for oil and grease was exceeded in Sand Point, Kabetogama, and Ash River, and for phenols in Rainy, Sand Point, and Kabetogama Lakes and Ash River. A sulfide standard to protect aquatic life was exceeded in Black Bay and Ash River, and that for ammonia in Ash River. Total PCB concentration exceeded criteria for the protection of aquatic life at one site in Kabetogama Lake.

Various human activities in the park may influence water quality in interior lakes. Table 10 shows the uses that are most likely to result in some impact to water quality for each of the park's interior lakes.

TABLE 10: ACTIVITIES ON INTERIOR LAKES THAT MAY IMPACT WATER QUALITY

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|---|
| Agnes | • | • | | | | |
| Beast | • | • | | | | |
| Brown | • | • | • | | | |
| Cruiser | • | • | • | | | |
| Ek | • | • | • | | | |

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| | | | | | | |
|---|---|---|---|---|---|---|
| Fishmouth | | | | | | |
| Jorgens | ● | ● | | | | |
| Little Shoepack | | ● | ● | | | |
| Little Trout | ● | | | ● | ● | |
| Locator | ● | ● | ● | ● | ● | |
| Loiten | | ● | | ● | ● | |
| Lucille | | | | | | |
| McDevitt | | | | | | |
| Mukooda | ● | ● | ● | ● | ● | ● |
| Mud | | | | | | |
| Net | | | | | | |
| O'Leary | ● | | | | | |
| Oslo | | ● | | | | |
| Peary | ● | ● | ● | | | |
| Quarterline | ● | ● | | | | |
| Quill | | ● | ● | ● | ● | |
| Ryan | ● | ● | | | | |
| Shoepack | | ● | ● | ● | ● | |
| Tooth | | | | | | |
| War Club | | ● | | ● | ● | |
| Weir | | | | | | |
| Wiyapka | | | | | | |

Source: Adapted from NPS 1984a; updated to reflect 1999 conditions.

## REGIONAL INFLUENCES

### Alkalinity and Acid Precipitation

Lake pH levels, which measure how acidic the water is, have varied over the years they have been measured. In a 1987 study pH for all the park's large lakes ranged from 5.95 to 7.57, with a mean value of 6.9 (Kepner 1987). However, pH was one of nine parameters exceeding EPA acute or chronic criteria for the protection of freshwater aquatic life measured in a 1995 report (NPS 1995a). The pH level was outside the range of 6.5 to 9 a total of 91 times out of 458 measurements taken at 30 stations. This is due in large part to the naturally low alkalinity of lakes in the Border Lakes region (Heinselman 1996).

Alkalinity is the most obvious measure of a lake's acid neutralizing capacity (Rapp et al. 1985). It is defined as the concentration of calcium carbonate or bicarbonate in the water. The lakes in Voyageurs, as well as most of the lakes in the Precambrian shield region, have low alkalinities compared to other freshwater lakes and streams in the country, which usually range from 330 to 3300 µeq/L of $HCO_3$ (bicarbonate) (Schindler 1988). Many northeastern lakes in Canada have values below 50 µeq/L, and are considered extremely acid sensitive (Schindler 1988). Alkalinities in the park's large lakes range from 182 µeq/L to 516 µeq/L and are considered relatively well-buffered for the region (Kepner 1987).

The Minnesota Pollution Control Agency (MPCA) has classified lakes with alkalinities lower than 200 µeq/L as moderately sensitive to acidification (Payne 1991). This is also the EPA criterion for the protection of aquatic life (NPS 1995a). Using MPCA ratings, Namakan and Rainy Lakes would be classified as moderately sensitive, Sand Point as potentially sensitive, and Kabetogama as non-sensitive to acidification.

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Alkalinities range between 80 and 260 $\mu$eq/L for all but five interior lakes that were measured. Little Trout, Mukooda and O'Leary have higher alkalinities, with Mukooda and O'Leary even higher than the average of those found in Lake Kabetogama. Of the 26 lakes tested, 18 had alkalinities between 100 and 200 $\mu$eq/L, defined as "moderately sensitive" to acidification (Payne 1991; L. Kallemeyn, pers. comm.).

Two of the interior lakes, Locator and Shoepack, have low alkalinities and would be classified as "extremely sensitive," which means they would have little resistance to acidification. Tooth and Little Trout Lakes have higher alkalinities and fall into the "potentially sensitive" category, and Mukooda and O'Leary Lakes have relatively high alkalinities compared to other park lakes and would be considered nonsensitive to acidification. These lakes would likely be able to neutralize acid rain or snow for a long or indefinite period of time.

Other features of the park's lakes, including their size, type (drainage lakes, where water moves through the system), and the presence of humic or organic materials, also contribute to their ability to temper the effects of acid rain or snow (Schindler 1988; Kepner 1987).

### Mercury and Other Contaminants

Despite higher than expected levels of mercury in fish, zooplankton, and phytoplankton in the park, levels of mercury in the water are low. A 1992 MPCA study found mercury concentrations of less than 4 ng/L (or 0.004$\mu$g/L) in Kabetogama, Sand Point, and Crane Lakes. This is consistent with levels in surface water in all tested northern Minnesota lakes, where mercury concentrations range from 2 to 7 ng/L (Sorensen et al. 1990). Mercury does exist in high levels in the aquatic environment; however, sediments tested in Crane and Kabetogama Lakes contained double the amount of mercury that they had in 1880 (Merger 1986).

Many of the park's lakes contain humic acids, which may increase the longevity of mercury in the water column (Swain and Helwig 1989). It is also possible that sulfates or total reduced sulfur emitted from the local pulp mills (see "Air Quality") may increase the water solubility of mercury (MPCA 1992).

PCBs have also been found in unusually high concentrations in some park fish and wildlife, notably lake whitefish (MDNR 1997) and bald eagles (Grim and Kallemeyn 1995). The source of PCBs is unknown and may originate from outside the park, or be a function of concentrations in lake water or in fish.

## FISHERIES

### FISH POPULATIONS IN THE PARK

There are 53 fish species currently in the park (NPS 2000f). Walleye and northern pike dominate the highest "trophic level" of the aquatic food chain in the park's four large lakes (NPS 1994a). Other predatory fish include smallmouth and largemouth bass, black crappie, sauger, yellow perch, lake trout, and burbot. The minnow family is well represented with 16 species of minnows, shiners, and dace (NPS 1994a). Other well-represented families are the perches (7 species), sunfish (8 species), and suckers (4 species). The six nonnative species found in the park are smallmouth and largemouth bass, black crappie, bluegill, green sunfish, and rainbow smelt. Although there is uncertainty among fishery professionals, the National Park Service considers these species nonnative. This is particularly true for the interior lakes. Other than the smelt, these species were all introduced to bolster the local sport fishery prior to the park's establishment.

The number of fish species in the park's four large lakes ranges from 36 to 40. While the number of species in the 26 named interior lakes ranges up to 18; the majority of the lakes (21) contain less than 10 species. Yellow perch and northern pike are the most widespread species, occurring in 27 and 23 lakes, respectively. Walleye, the species most sought after by anglers, only occurs in the large lakes and three interior lakes. Lake trout and muskellunge, two other sought-after species, each occur in only three lakes. Of the nonnatives, largemouth and smallmouth bass each occur in nine lakes, black crappie in six, bluegill in three, and rainbow smelt in two.

The park's small streams and numerous beaver ponds also support significant fish populations. The predominant fish species in these areas are northern redbelly dace, finescale dace, brook stickleback, and fathead minnow. Geological barriers and stages of beaver pond succession result in significant variation in species' richness and distribution, as well as abundance in these habitats (Schlosser and Kallemeyn 2000).

Most fish species in the park are believed to have originated from the Mississippi glacial refugium, using corridors provided by the retreat of the Wisconsin ice sheet (Crossman and McAllister 1986). Ultimately, these connections were lost and fish populations isolated from their source. In some instances unique strains of fish developed. For instance, Shoepack and Little Shoepack Lakes on the Kabetogama Peninsula contain a genetically unique muskellunge strain (Fields et al. 1997). Cruiser, Little Trout and Mukooda lakes supported native lake trout populations prior to the 1940s when stocking of nonnative trout strains was initiated.

### INFLUENCES ON FISHERIES

Native fish populations are believed to have been affected by stocking, sport and commercial fishing, and regulated lake levels. Local pollution from septic systems, logging, and fuel leaks from outboard motors, as well as regional pollution (such as mercury and oxides of sulfur and nitrogen from industrial sources; see discussions of visibility on page I–126 and regional air quality concerns on page I–127), may also affect fish by altering the water chemistry (Cole and Landres 1995).

#### Fish Stocking

Fish stocking has taken place in park waters since 1917 (NPS 1994a), when a walleye hatchery was established at the western end of Rainy Lake. Walleye fry were supplied to area lakes from the hatchery until 1943. Stocking continued in Rainy and Kabetogama Lakes, with over a half billion walleye fry introduced to Rainy Lake and almost 80 million into Kabetogama since the early part of the century. Some of these transplants were likely from another watershed; consequently, they may have been genetically different than the native populations. Other species that have been stocked in the park's four large lakes include sunfish, black crappie, largemouth bass, smallmouth bass, northern pike, yellow perch, muskellunge, and catfish (NPS 1994a). No stocking is currently occurring in the large lakes (Kallemeyn, pers. comm. July 1999).

Some of the park's interior lakes were stocked with game fish, including largemouth bass, smallmouth bass, bluegill, and black crappies from the 1940s up to 1970 (NPS 1994a). Lake trout from another watershed were added to lakes where a native strain was present; however, since 1988 all lake trout stocked in Mukooda and Little Trout Lakes have been the Gillis Lake strain, which is originally from the nearby Boundary Waters Canoe Area (Kallemeyn, pers. comm. July 1999). Lake trout are now stocked in the two lakes every other year. Rainbow trout, an exotic species, was introduced into Beast and O'Leary Lakes in 1964 after the native fish were removed with toxaphene. The Minnesota Department of Natural Resources continued to stock O'Leary Lake until 1971, when walleye and northern pike re-invaded the lake, making survival of the trout impossible. Beast Lake was stocked until 1980 (NPS 1994a). In the 1990s the National Park Service and the Minnesota Department of Natural Resources have cooperated in an attempt to reestablish the native fish community in Beast Lake, including northern pike, the principal predator.

The park's fish communities have also been affected by illegal stocking by private parties. Nonnative bass have been illegally introduced into Quarterline and Beast Lakes in recent years (Kallemeyn, pers. comm. July 1999). Rainbow smelt, which were illegally introduced into lakes in the upper reaches of the Rainy Lake watershed (Franzin et al. 1994), first appeared in Rainy and Namakan Lakes in 1990. Based on studies conducted elsewhere, the rainbow smelt may have a significant effect on the park's aquatic ecosystem, and in particular its cool and coldwater fish species (Evans and Loftus 1987).

### Sport and Commercial Fishing

In accordance with the park's enabling legislation, recreational fishing is allowed in all the park lakes under regulations established by the National Park Service and the Minnesota Department of Natural Resources. The only exception is Beast Lake, which has been closed to fishing to allow the restoration of the northern pike population. Walleye, northern pike, and other species are caught with hook and line in both the summer and winter. The spearing of northern pike is permitted in the winter (NPS 1994a). The Minnesota Department of Natural Resources issues whitefish and cisco sport gill netting licenses for the park's four large lakes. Grandfathered summer gillnet commercial fisheries for whitefish remain on Namakan and Rainy Lakes.

Neither the Minnesota Department of Natural Resources nor the Ontario Ministry of Natural Resources set sport catch quotas, but rely instead on daily and possession limits, plus size limits, to regulate the lake fisheries. Both agencies sell an indefinite number of fishing licenses, which can mean the number of fish caught may be higher than the established target levels (see the discussion of impacts on fisheries for alternative 1). Catch quotas are assigned by species for commercial fishing, however.

Sportfishing has traditionally been and continues to be the principal visitor activity in park lakes. In 1998 and 1999 Kabetogama Lake received 39.1% of the fishing pressure and 42.4%, respectively; Rainy Lake, 37.9% and 37.1%; Namakan Lake, 16.2% and 13.6%; and Sand Point Lake, 6.8% and 6.9% (Eibler 1999; Burri 2000).

Walleye are the target of most anglers and typically comprise between 60% and 80% of all fish caught in the park's large lakes (Eibler 1995). The mean annual yield (pounds) of walleye from Kabetogama Lake for the years 1984–93 was 96,689; from the U.S. side of Rainy Lake, 19,645; and from Namakan Lake, 24,144 (Eibler 1995). Since 1994 the walleye harvest from Rainy Lake has increased substantially, with the average harvest from 1994 to 1998 being 32,753 pounds (Eibler 1998, 1999). This increase is concomitant with a return to more natural lake levels in May during walleye spawning that began in 1988 (see "Water Resources") and the establishment of a slot-length limit that requires anglers to release all walleye from 17 to 25 inches long.

The mean annual sportfishing yield for 1984–93 of northern pike was second to walleye in all three lakes. In Kabetogama Lake pike comprised 19% of the total angling yield and in Namakan Lake 29%. In Rainy Lake the average yield of pike (43%) was nearly as high as of walleye (45%) during this time period (Eibler 1998). Since 1994 the average yield of northern pike from Rainy Lake has been relatively consistent, averaging about 20,000 pounds per year (Eibler 1998). Pike yields from the lakes in the Namakan Reservoir have been highly variable due to recruitment problems that occur because of the low springwater levels associated with 1970 water management rule curves (see "Water Levels").

Other species typically harvested from the park's large lakes by anglers include sauger, yellow perch, black crappie, and smallmouth bass. Anglers fishing in the interior lakes may also catch muskellunge, lake trout, and largemouth bass.

Although the remoteness and relatively light use of the park's interior lakes mean no creel surveys are conducted, voluntary creel cards are used to determine fishing pressure and harvest, despite their many known biases. From these cards, it appears that the number of anglers fishing interior lakes from 1991 to 2000 remained fairly stable. Catch rates for northern pike decreased from the 1980s to the 1990s, but exceeded those from the park's large lakes. Catch rates of largemouth bass have been consistently high (Kallemeyn 1990; Broschart 2001).

Commercial fishing began on Rainy Lake in 1885 with a pound-net fishery for lake sturgeon. This species was fished to commercial extinction, and the Minnesota sturgeon fishery was closed in 1922 (NPS 1994a). In 1916 Rainy Lake supported 62 licensed commercial fishers for walleye, northern pike, and lake whitefish in Ontario and 14 in Minnesota. Today, commercial harvest from the south arm of Rainy Lake is restricted to lake whitefish on the Minnesota side and to lake whitefish, black crappie, and northern pike on the Ontario side (MDNR and OMNR 1998). Harvest is regulated by quotas in both jurisdictions. There is one commercial whitefish operation in the park portion of Rainy Lake and one commercial whitefish operation in the park on Namakan Lake. An Ontario commercial fishery harvests walleye, northern pike, lake whitefish, and lake sturgeon from Namakan Lake, and it harvests lake whitefish, lake sturgeon, and black crappie from Sand Point Lake. No commercial fishing occurs on Kabetogama Lake.

### Water Levels

Regulated water levels may have an impact on the reproductive success of some of the park's key sportfish, including walleye, northern pike, and yellow perch.

Walleye require clean (algae free) gravel, rubble, or small rocks to spawn. In unregulated lakes these gravel beaches move progressively lower as lake levels fall during the summer and fall. However, in the park lake levels have been held high and stable all summer. Water levels have fallen during the winter (when no wave action occurs) and were not refilled until late spring in most years. This left gravels "stranded" at higher elevations and out of the water during the spring spawn (Kallemeyn 1987). To help counteract this problem, lake levels in Rainy Lake were held at the highest level allowable under existing rule curves for May at the direction of the Federal Energy Regulatory Commission beginning in 1988. Recent creel surveys indicate steadily increasing angler harvest of walleye in Rainy Lake since shortly after these changes were made (Eibler 1997, 1999). In addition, the supplemental order that was implemented in 2000 will result in earlier spring peaks and a summer drawdown. Although continued regulation will maintain less than natural variability, walleye reproduction success should improve as a result of these changes.

Lake levels have also been found to be clearly correlated with reproductive success of northern pike, which require mats of short emergent vegetation, such as aquatic grasses and sedges, to lay its eggs. Kallemeyn (1987) demonstrated a high correlation between the abundance of newly hatched northern pike in Kabetogama Lake and lake levels within three weeks of the ice-out date. Most of the time (60%) lake levels were too low to inundate vegetation appropriate for pike spawning. Again, an earlier spring peak should improve spawning.

### Visitor Activities and Local Pollutants

Pollutants to the park's large lakes (silt, leaked oil and fuel, and other pollutants) may be contributed by logging, mining, and cabin and resort development along shorelines in the watershed, by the creation and use of designated and undesignated campsites and day use areas, and by motorized boats and snowmobiles (Cole and Landres 1995; Weeks and Andrascik 1998). Boat propellers, particularly from larger boats, may also increase turbidity (park staff, pers. comm. 1999). Wave action or dredging to maintain boat access can remove overhanging banks, which normally provide protective habitat (Cole and Landres 1995). Any or all of these influences could directly affect fish, or indirectly affect them through the loss of habitat or prey species (Cole and Landres 1995).

## REGIONAL INFLUENCES

### Mercury

Fish and fish-eating wildlife in Voyageurs National Park show elevated levels of mercury (Henning et al. 1989). As an example, walleye from Sand Point Lake in the park have contained as much as 4.5 µg of mercury per gram of fish. This is about 1/3 the maximum weekly intake recommended by the Minnesota Department of Health in a single gram (Henning et al. 1989) and more than four times the U.S. Food and Drug Administration's level of 1 µg mercury per gram of tissue (Glass et al. 1986). The problem is not confined to the park, as fish consumption advisories have now been extended to a large number of lakes in Minnesota (Glass and Sorensen 1999). The source of mercury is most likely atmospheric and originates some distance away from the park itself (see "Air Quality").

Mercury concentration in park lake water is low, but it is high in zooplankton, fish, fish-eating wildlife, and sediments. Methylmercury, the organic form of mercury and the one that is dangerous to the health and reproductive processes of wildlife and humans, is bioaccumulated through the food chain. That is, a fish eating zooplankton containing mercury at one level stores it at a concentration much higher than the zooplankton. A fish eating this fish (such as a pike or walleye) concentrates it further, and a fish-eating bird (loon, eagle), wildlife (mink, otter), or human concentrates it even further. One study (Sorensen et al. 1990) found mercury concentrations increased an average of 36,000 times from the water column (2.5 ng/L) to zooplankton (88 ng/g or 88,000 ng/L), and 176,000 times from its level in the water to concentrations in northern pike (450 ng/g). The already high concentrations may be exacerbated by the recent addition of the rainbow smelt because studies have shown that where they are present, larger predatory fish such as pike and walleye have higher levels of mercury.

### Acid Precipitation

Wet sulfate deposition and pH of the park's lakes indicate acid precipitation is not a problem for fish at this time, even in some of the extremely sensitive interior lakes. Based on studies of northwestern Ontario lakes similar to those in the park, Schindler (1988) estimated that wet sulfate deposition rates of 10 kg/ha on a long term basis would be required before impacts to fisheries would be measurable. In 1996 and 1997, 5–6 kg/ha of wet sulfate was deposited (see "Air Quality").

## WILDLIFE

A diverse assemblage of verified wildlife including more than 230 species of birds, 10 species of reptiles and amphibians, 53 species of fish, 42 species of mammals, and innumerable invertebrates have been observed or recorded in the park (Weeks and Andrascik 1998; NPS 2000f). By far the most numerous group is the invertebrates, which includes insects, spiders, protozoa, earthworms, crustaceans, and many others (Daniel and Sullivan 1981).

The park has two distinct but overlapping wildlife habitat types — the terrestrial or forest ecosystem and the aquatic ecosystem. Each has its own set of herbivores, insectivores, and carnivores, although some species "cross the boundary" and inhabit or get food from both.

Descriptions of individual species' habitat, or issues concerning that species, are limited to those where the park has implemented or is planning to implement management or monitoring efforts. Species formally listed with the state of Minnesota or the U.S. Fish and Wildlife Service as threatened or endangered, or as being of special concern, are discussed under "Species of Special Concern."

### UPLAND WILDLIFE

Invertebrates serve several functions in the forest ecosystem. They are an essential part of the food chain and are responsible for the release of nutrients through much of the decomposition that occurs in the park. Insects and insect larvae can defoliate trees enough to kill them (Holling 1991). An important soil invertebrate in boreal forests is the mite; one count of a square foot of soil in a balsam fir forest showed 15,000 mites between the surface and two inches (Daniel and Sullivan 1981). Mite larvae feed on needles of the fir and release nutrients. Springtails, beetles, fly larvae, sow bugs, snails, and slugs are other abundant invertebrates that live in forest soils. Invertebrates (primarily insects) also live on vegetation and in the air, where they are consumed by a variety of forest birds.

Vertebrate animals that are herbivores eat seeds, bark, buds, and twigs, while carnivores eat invertebrates, carrion, fish, or larger prey. Small forest rodents, such as mice and voles, chipmunks and squirrels, as well as finches and sparrows, primarily eat seeds, although they also sometimes eat vegetation or insects (Daniel and Sullivan 1981). Small mammals, like rodents and mice, also serve as prey for hawks, owls, weasels, coyotes, red fox, and other carnivorous birds and mammals. Northern pike, muskellunge, and largemouth bass may eat small mammals swimming or coming too close to shore (Soupir 1981).

Browsers (animal species that eat the parts of woody shrubs, as well as herbs and grasses) divide these plant resources by height. Snowshoe hares feed at or just above ground level, white-tailed deer feed a little higher, and moose higher yet. Porcupines feed in the treetops, and beavers feed on tree tops after they cut them down. Ruffed grouse are ground feeders, and spruce grouse often feed in trees in the park. Cedar waxwings eat some insects, but most of their food is berries or flowers (Daniel and Sullivan 1981). Black bears are also major consumers of berries in the park (Schaberl, pers. comm. July 1999).

Most of the herbivores in the forest are insects, and most of the carnivores are insect eaters (Daniel and Sullivan 1981). Shrews, moles, and bats are examples of mammals that eat insects almost exclusively, whereas bears, skunks, and rodents mix some insects into their diet. Digging mammals searching for insects and soil invertebrates both help aerate and enrich nutrient-poor soil in some parts of the southern boreal forest (Daniel and Sullivan 1981).

Insect-eating birds include many species that migrate from neotropical regions in South and Central America. Forest birds, more than one-third of whom are neotropical migrants, make up the largest number (about 64%) of vertebrate species in the park (Green 1995). In Minnesota's Border Lakes region there are 121 forest or tree-dependent birds, the highest number of species of anywhere in the state. In addition, one study found between 61 and 67 different species of birds per 25-mile route in the Border Lakes region, marking it as the area with the highest bird species richness of any region

TABLE 11: SAMPLE OF BIRDS OCCURRING IN THE PARK OR IN THE VICINITY

| [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|
| Savannah sparrow, Le Conte's sparrow, Lincoln's sparrow, spruce grouse, gray jay, boreal chickadee, chipping sparrow, dark-eyed junco, crow, sedge wren, Tennessee warbler, Nashville warbler, palm warbler, Connecticut warbler, yellow-bellied flycatcher, kinglets, Swainson's thrush, Hermit thrush, Nashville warbler, Cape May warbler, yellow rumped warbler, bay breasted warbler, loon, bald eagle, osprey, red necked grebe, merganser, double crested cormorant, ring-billed gull, herring gull, great blue heron, American pelican, spotted sandpiper, common snipe | Crow, cedar waxwing, robin, chestnut-sided warbler, mourning warbler, yellow-throat warbler, yellow warbler, golden winged warbler, magnolia warbler, kingbird, tree swallow | White-throated sparrow, rose-breasted grosbeak, ruffed grouse, blue jay, veery, cowbird, mourning warbler, chestnut-sided warbler, redstart, black-capped chickadee, red-eyed vireo, downy woodpecker, least flycatcher, blue jay, black and white warbler, Nashville warbler, Canada warbler, magnolia warbler, bald eagle | Spruce grouse, pine siskin, evening grosbeak, wren, kinglets, Swainson's thrush, hermit thrush, three-toed woodpecker, boreal chickadee, black throated green warbler, northern parula warbler, yellow-rumped warbler, blackburnian warbler, ovenbird, pine warbler, Cape May warbler, sharp shinned hawk, raven, goshawk, boreal owl, gray jay, bald eagle, osprey, broad-winged hawk, Cooper's hawk, great horned owl, barred owl, long eared owl |

SOURCE: Green 1995.

north of Mexico (Green 1995). Three families of birds make up most of the neotropical migrants — vireos, flycatchers, and 27 species of warblers (Green 1995). All are insectivores, and prey can include the larvae of the spruce budworm or forest tent caterpillar, which are potentially economically devastating forest defoliators. One study found the economic benefit from predation by birds on the budworm larvae to be approximated $4,700 per square mile (Takekawa and Garton 1984).

Larger forest-dwelling carnivores in the park include raptors (such as eagles, hawks, osprey, and owls), members of the weasel family (such as fisher, pine marten, mink, river otter, least, long-tailed and short-tailed weasels, and the skunk), cats (including bobcat, an occasional mountain lion, and potentially the Canada lynx), and canines (including the red fox, coyote, and gray wolf). Some of these species are also part of the aquatic ecosystem, subsisting largely or entirely on fish. These include the mink, river otter, bald eagle, and osprey.

Omnivores (animals that eat both animal and plant food) in the park include turkey vultures, ravens, crows, the gray jay, and the black bear (Daniel and Sullivan 1981).

### AQUATIC WILDLIFE

Aquatic vegetation — including plankton, submerged vegetation in lakes and open water bogs, emergent vegetation in marshes and along lakeshores, as well as grasses, herbs, shrubs, and trees in wet meadowland forest communities — may all serve as food sources for the abundant variety of waterbirds, fish, amphibians, and wetland mammals in the park.

In the park aquatic ecosystem zooplankton belong to the first trophic level of consumers in the aquatic food web. The concentration of zooplankton is related to the concentration of phytoplankton, and phytoplankton to the concentration of nutrients (see "Water Quality" and "Vegetation"). The water flea is a common zooplankton in the Border Lakes region (Heinselman 1996). Bottom-dwelling aquatic insects, such as the larvae of midges, mayflies, and dragonflies, as well as worms, crayfish,

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snails, sponges, and clams, are also important occupants of the shallow zone of lakeshores (Daniel and Sullivan 1981; Heinselman 1996).

Native crayfish feed on some aquatic plants, but do not limit plant growth. They are food for many predators in the park, including mink, river otters, and shorebirds. However, in some of the state, the exotic rusty crayfish (*Orconectes rusticus*), which originated in the Ohio River drainage, has displaced native crayfish and affected natural aquatic ecology by eating lake and stream vegetation, as well as the eggs of native fish (Helgen 1990). It has not yet been observed inside the park, but was collected in Spring and Johnson Lakes immediately outside the park (Kallemeyn, pers. comm., July 1999). The park is monitoring for the presence of the rusty crayfish, as well as two additional aquatic invertebrates, the exotic zebra mussel and the spiny waterflea, as well as exotic plants (Kallemeyn, pers. comm. July 1999).

Fish are notable consumers of invertebrates, including aquatic insects. Many shorebirds, such as spotted sandpipers or common snipes, feed to some extent on invertebrates. Amphibians in the park, including two species of salamanders and eight kinds of frogs, subsist almost entirely on invertebrates (Oldfield and Moriarty 1994). Amphibians can be particularly sensitive to changes in pH, and they are often monitored to determine whether acidification of lakes or wetlands in the northern Great Lakes areas has occurred (Heinselman 1996).

Fish in the park serve as an important link in the aquatic or semi-aquatic ecological food web, providing a significant source of food for osprey, bald eagle, loon, otter, black bear, and other birds and mammals in the park. Loons subsist entirely on fish and aquatic invertebrates, whereas red-necked grebes and mergansers eat some vegetation as well (Derr 1995). Other fish-eating grebes and diving ducks that are common or nest in the park include pied-billed grebes, ring-necked ducks, the common goldeneye, and the lesser and greater scaup. More common dabbling ducks include the mallard, blue winged teal, and American widgeon.

Tests of mink, loons, gulls, otters, and other fish-eating wildlife in the park have shown in many cases that they have bioaccumulated mercury or other toxins (MPCA 1993). For example, the mean mercury concentration of fur taken from otters in the park was higher than that from otters in industrialized parts of Wisconsin (MPCA 1993).

## SPECIES MANAGED OR MONITORED BY THE PARK

### Ungulates (Moose and Deer)

Moose are in their peripheral range in the park and occur in low numbers (Gogan et al. 1997). Their habitat is primarily disturbed forest. Like deer, moose prefer to graze in forests with areas of open ground, although they require hundreds of acres of early successional trees to meet their nutritional needs (Heinselman 1996). In the spring and early summer submerged plants in lakes and bogs become important food sources. The primary range of moose in Minnesota is east of the park, where in some cases silvicultural practices are designed to favor them (Gogan et al. 1997).

Aerial counts adjusted for visibility of moose from the air indicate about 60–100 moose on the Kabetogama Peninsula, at a density of 0.23 per square kilometer (Gogan et al. 1997). This is consistent with other areas considered peripheral to the species' primary habitat (Gogan et al. 1997). The relative lack of fire inside the park may be another factor keeping moose densities low; densities increased fivefold in nearby Superior National Forest following a 1971 fire (NPS 1994a).

Whereas moose prefer disturbed habitat in boreal communities, white-tailed deer were traditionally more prevalent in hardwood forests south of the park (Pastor and Mladenoff 1991). In the southern transition boreal forest of the park, deer preferred aspen or conifer forests, with 20–50% of the area either recently clear-cut or burned for most of the year (Heinselman 1996). Even though these areas were rare in what is now the park before Euro-American settlement, logging beginning in the early 20th century created habitat more favorable to white-tailed deer, and the species expanded northward until it became common in the 1920s (Gogan et al. 1997). It is estimated that about 3,800 deer now live on the Kabetogama Peninsula at an average density of 22 per square mile (8.37/sq km); these densities are comparable to those in habitat south of the park (Gogan et al. 1997). Densities to the north in portions of northwest Ontario adjacent to the park are much lower and ranged between 6.6 and 15.0 per square mile (2.5 and 5.7/sq km) in 1992 (Whitlaw and Lankester 1994).

The deer populations of the park winter in cedar swamps, dense mixed lowland conifer stands, or aspen/birch/balsam forests. Larger groups of 50 or more can congregate in the winter as an anti-predator strategy (Heinselman 1996; DelGiudice et al. 1991). These deer "winter yards" are areas where wolf packs also tend to locate, as white-tailed deer are the primary food source for wolves in the park (Schaberl, pers. comm. Oct. 1998; DelGiudice et al. 1991).

### Beaver

Beaver are considered an important species of the Border Lakes region. At least 505 active beaver colonies were found in the park in 2000 (P. Shelton, pers. comm. 2000). Using average colony sizes from Smith (1997), approximately 2,800 beaver inhabit the park. This is the highest known density of beaver in Minnesota. Beavers are a prey source for wolves in the park and are able to modify much of the park's hydrology and vegetation (Johnston and Naiman 1990). Even though fluctuating lake levels have adversely affected some beavers by lowering water levels to where lodges are out of the water (Smith and Peterson 1988), logging from before the park was created has resulted in an abundance of aspen, their favorite food trees (NPS 1988a).

### Black Bear

The black bear is omnivorous, eating a variety of berries, fruits, nuts, insects, fish, carrion, and occasionally small mammals such as deer fawns or moose calves (Heinselman 1996). The number of black bears inside the park is unknown; however, recent evidence suggests between 100 and 150 may occupy habitat in the park at some time during the year (Schaberl, pers. comm. July 1999). This is a density of one bear per 1–2 square miles, higher by a third than the neighboring forest and private land where hunting is allowed (NPS 1994a).

Bears are good swimmers and may visit lakecountry campsites in the park, including those on islands (Heinselman 1996; Gurtin 1996). A recent park bear management plan resulted in bear-proof food storage lockers, bear poles, and increased visitor education; however, the number of bear/human interactions in the park is largely determined by the success of the blueberry crop (J. Schaberl, pers. comm. July 1999; Heinselman 1996). Berries are a critical food resource for bears attempting to gain enough weight before denning (Heinselman 1996). When the blueberry crop is abundant, bear/human interactions are minimal in the park; if it is poor, incidents, particularly in late July and August, are likely to increase (J. Schaberl, pers. comm. July 1999; Heinselman 1996). Despite the potential for human/bear conflicts when food is unavailable, black bears are apparently disturbed by high levels of human activity. One study showed they would den an average of 31 days earlier in the season in areas with abundant recreational activity than in similar areas without such activity (Knight and Cole 1995b).

### Osprey

The fish hawk, or osprey, was listed as a special concern species by the Minnesota Department of Natural Resources until 1996, when it was delisted. In a study of ospreys and bald eagles, osprey reproduction was shown to be much less susceptible to change than that of eagles (Cuthbert and Rothstein 1988). Whereas eagles built nests close to the shores of the park's large lakes and were disturbed by fishing boats, hikers, or day visitors, ospreys built nests further from shore and did not seem to be bothered by the presence of humans when they foraged for fish. In 2000 the park had 18 active breeding pairs (Grim, pers. comm. 2000).

### Common Loon

The common loon is the Minnesota state bird, and for many it is the bird most associated with the Great Lakes region (Heinselman 1996). This monogamous waterbird nests in early May in backwater bays, small lakes, or on islands. Chicks hatch in late June or early July. The park is home to 250–280 adult loons, 60 of whom nested on the interior lakes in 1999 (NPS 1999f). This represents about 0.5% of the statewide loon population.

The reproductive success of loons breeding on the park's large lakes is lower than for other lakes in the region (Kallemeyn and Cole 1990; NPS 1999f); the cause has been attributed to a variety of factors. Loons and other fish-eating bird species in the park (including red-necked grebes, common mergansers, and hooded mergansers) have been found to have high levels of methylmercury and other toxins in their blood and feathers (Derr 1995; MPCA 1993). In the case of loons, it is high enough to decrease reproductive success and/or alter the behavior of juveniles (Derr 1995). Loons may also be sensitive to human disturbance, particularly in the early stages of nesting (McIntyre 1988). However, almost certainly the major factor in the low reproductive rate of loons and other shore and marsh nesting birds in the park has been the flooding of nests by the abnormally early rise of spring water levels on the lakes of Namakan Reservoir (Kallemeyn and Cole 1990; McIntyre 1988; Reiser 1988; NPS 1999f). The average reproductive rate on Namakan Reservoir from 1979 to 1999 was 0.12 young per adult loon, compared to 0.40 for unregulated lakes of the nearby Chippewa National Forest (1970–74; McIntyre 1975), or 0.20 for Lake Vermilion (1983–99; NPS 1999f). On Rainy Lake, where fluctuations are less than in unmanaged lakes, reproductive success was comparable at 0.27 chicks/adult (1979–92) to unregulated lakes in the region. Reproductive success on the park's interior lakes (all are unregulated) during this time period was also comparable at 0.22 chick/adult (NPS 1999f).

Loons nesting on interior lakes also may have suffered from the activities of hikers, boaters, and anglers in May and early June, as some adults abandon the nest and leave eggs unincubated when disturbed. Because lakecountry loons have necessarily habituated to the presence of humans, relative impacts from disturbance to loons nesting on interior lakes may be greater. One study found loons would not leave nests until humans had approached to within 27 feet (8.5 m) on a lake with heavy canoe traffic, whereas those on a remote lake with little human activity would flush when people were within 349 feet (112.6 m) on average (McIntyre 1988). However, park-specific data are inconclusive (NPS 1999f).

### Colonial Nesting Waterbirds (Cormorants, Gulls, Herons)

Colonial nesting waterbird species actively monitored by the park include the double-crested cormorant, ring-billed gull, herring gull and great blue heron. Cormorants in the park enter from active breeding sites on the Canadian side of Rainy Lake (NPS 1994a) and are subject to disturbance and displacement by boaters. The park monitors cormorant numbers, which have increased since 1973, and may analyze and protect future cormorant nesting habitat within the park boundary (NPS 1994a).

Cormorants are a fish eating species, and may suffer from elevated levels of mercury, although this is not known.

Ring-billed gulls were eliminated from the Great Lakes region by 1900, but have returned and are now breeding throughout the region, including the park. Herring gulls may be affected by an increase in the ring-billed gull population. Herring gulls nest on barren rock outcrop islands in open water and are the most prevalent colonial nesting waterbirds in the park.

Park biologists currently monitor nine great blue heron breeding colonies within the park. Populations of this species have varied from more than 800 breeding adults in 1986 to 300 in 2000.

All four species — double-crested cormorants, ring-billed gulls, herring gulls and great blue herons — as well as common terns and American white pelicans (see species of special concern), are susceptible to disturbance by humans from boating, hiking, trail and campsite development, and day use or houseboat mooring (Knight and Cole 1995).

### INFLUENCES ON WILDLIFE

Wildlife are affected by visitors. The extent of the effect depends on many things, including the type, predictability, frequency, and timing of the recreational activity (Knight and Cole 1995). Although fast-moving, noisy, and threatening activities, such as motorboats or snowmobiles, have a greater startling effect, some species can be particularly disturbed by slow-moving or stopped vehicles, including canoes or kayaks (Anthony et al. 1995). Particularly in the winter, the loss of calories expended in flight to avoid threatening activities can be significant (Bowles 1995). Wildlife may also abandon nests, denning sites, or territory if activity is beyond a certain frequency threshold, even if it is nonthreatening (Knight and Cole 1995).

Human actions can also result in the loss of wildlife habitat. The compacting of soil can completely eliminate microbiota, disrupting decomposition and nutrient cycling, which then changes the ability of the soil to accommodate vegetation (Cole and Landres 1995). Trampling, cutting, or removing vegetation can reduce or eliminate cover for wildlife.

Aquatic environments can be changed through the addition of pollutants from motorboats, siltation from shoreline and boat use, and the removal of shoreline vegetation (Cole and Landres 1995). Fluctuating water levels in Namakan Reservoir have resulted in adverse effects on a variety of wildlife, including fish, beaver, muskrat, otter, loons, and other shore or marsh nesting birds and benthic invertebrates, including habitat loss, loss of species diversity, and reduced reproductive success (Kallemeyn and Cole 1990).

### SPECIES OF SPECIAL CONCERN

This section describes plant and animal species listed as threatened or endangered under the federal Endangered Species Act. It also includes a brief description of species listed by the Minnesota Department of Natural Resources.

#### Federal Threatened Species

Threatened species are assumed to be liable to become endangered, so they are offered protection similar to that for endangered species. It is illegal to take an individual of a threatened or endangered species, directly or indirectly, without a permit from the U.S. Fish and Wildlife Service. Agencies may not take actions that adversely affect a protected species or its critical habitat without formal consultation and a binding biological opinion from the U.S. Fish and Wildlife Service.

**Bald Eagle** *(Haliaeetus leucocephalus)*. The bald eagle is a federal threatened species that has been proposed for delisting; it is listed as a species of special concern by the state of Minnesota. Bald eagles arrive in the park in late February or March to begin courtship displays and nest building. Many occupy existing nest sites, and both established and new nests are preferentially located near gull colonies, in areas of the lake that normally thaw quickly, or in white or red pines (Grim and Kallemeyn 1995). A majority (64%) tend to locate nests on islands or points that extend into lakes; the rest on the mainland shorelines of the park's large lakes. Eagles usually feed on carrion from wolf-killed deer or moose until the lakes thaw, when their diet switches primarily to fish and birds. A pair produces one or two eaglets, which usually hatch in May (Grim, pers. comm. 1999b).

Bald eagles have been subject to a number of possible environmental stressors across their range, including PCBs, DDT, DDE, mercury, disturbance and displacement by humans, and severe spring weather in the region of the park (Grim and Kallemeyn 1995). The banning of DDT has led to an increase in numbers in the United States as well as in the park; five new nests were built on Kabetogama Lake and nine new nests on Rainy Lake from 1982 to 1993. In 1998 and 1999 productivity (number of fledglings per occupied nest) in and immediately adjacent to the park improved by 25% over what it had been in the previous four years (Grim 1999a). However, the reproductive success of eagles in the park remains lower than in some neighboring forests and the Minnesota population (Grim and Kallemeyn 1995; Nelson 1995; Eckstein et al. 1999; Grim 1999a; USFS 1998, 1999a).

The reasons for the lower than expected breeding success are unknown, although toxins may be at least partly to blame (Grim and Kallemeyn 1995). More than 13,000 acres (5000 ha) in what is now the park were sprayed with DDT to control spruce budworm between 1958 and 1961. Eggs in the park have been found with high levels of PCBs (MPCA 1993). These persistent chlorinated hydrocarbons can impair an eagle's ability to produce viable eggs or cause developmental defects, and DDT has been held primarily responsible for bald eagle and other raptor population declines well into the 1970s, despite being banned in 1972.

Tests show high levels of mercury inside the park in eaglet feathers and blood. Even though the noted mercury levels are not known to have adverse effects on bald eagle reproduction, it is possible that mercury in combination with higher than normal PCBs or other organochloride compounds may have cumulative or synergistic effects (MPCA 1993).

In addition to the effects of toxins, eagles can be quite sensitive to visitor disturbance (Grim and Kallemeyn 1995). The birds build their nests close to the shoreline, with a mean distance of 293 feet (92.5 m) for all nests monitored in the park between 1973 and 1993. Yet, more than 95% of the annual human visitation to the park takes place on major lake surfaces and on land within 630 feet (200 m) of the shoreline.

Eagles in the park seem particularly stressed by slow-moving or anchored fishing boats and by campers, hikers, or visitors using islands and shorelines during the day (Fink 1992). Of these, they were more disturbed by people on foot than in boats. Studies of eagles in other parts of the country confirm these findings. Eagles are apparently agitated or leave the nest when either boaters or hikers pass by; however, they remain off the nest or visibly disturbed an average of three times longer if the cause of the disturbance is a hiker or angler rather than a boat (Grubb et al. 1992). Flushing eagles from the nest can adversely affect adult eagles through energy loss, but more severely affects eaglets or eggs (Anthony et al. 1995; Grubb et al. 1992). If noise or activity is very frequent, some eagles may either abandon a nest or not return to it the following year (Knight and Cole 1995). The park has established ¼ mile (0.4 km) buffer zones around nests in an attempt to keep visitors from disturbing eagles during critical periods of nesting.

**Gray Wolf** ***(Canis lupus).*** There are about 3,000 gray wolves in the lower 48 states. While it remains as threatened on the federal list of protected species, it has been downgraded to a species of special concern by the Minnesota Department of Natural Resources because populations in Minnesota are doing well. Originally, the gray wolf occupied most of the eastern United States and southeastern Canada. It is now largely confined in the lower 48 states to the northern reaches of Minnesota, Michigan, Wisconsin, and the Rocky Mountains of Idaho, Montana and Wyoming — about 3% of its original range (USFWS 2000; NPS 1994a). It was officially listed as a federal endangered species in 1974; its status was changed to threatened in 1978 as wolf numbers began to increase in Minnesota. The Minnesota subpopulation is the largest in the lower 48 states and is considered healthy enough that it may soon be delisted altogether (DonCarlos 1997; USFWS 2000).

Wolves in Minnesota depend on white-tailed deer to a large extent for food, although beaver can represent a significant alternative food supply if the deer population is low. They may also hunt moose and snowshoe hare, as well as other small mammals and birds, when necessary (Heinselman 1996).

Six wolf packs of between 2 and 11 wolves consistently use the park, and two to three packs use the Kabetogama Peninsula each year (Route 1999). Pack sizes in or near the park average 5.5 wolves and are at the low end of the range (Route 1999). It is estimated that the park has between 25 and 55 wolves in it at any given time (NPS 1994a; USFWS 1994); in the winter of 1998–99, 40–55 wolves in 7–11 packs had territory that included area in the park (NPS unpublished data). At this time it appears wolf density in and around the park is comparable to other areas where gray wolves feed primarily on white-tailed deer (Route 1999).

Human influences on wolves include changes to their habitat, or to that of their primary prey, the white-tailed deer. Some wolves, especially those having little human contact, are apparently sensitive to human disturbance and require large tracts of land with low human densities to survive. Scientists have found they will not survive in habitat where road densities are greater than 0.93 mile of road per square mile, nor will they establish dens within 0.5 to 1 mile of trails (NPS 1994a). This avoidance strategy is apparently a means to avoid harassment or killing by humans (Knight and Cole 1995). Wolves whose territories include the park have been the target of illegal hunting, as well as road kill (Route 1999).

In 1992 the U.S. Fish and Wildlife Service issued a biological opinion indicating the practice of allowing snowmobilers free access to all areas of the park was having a detrimental effect on wolves (USFWS 1994). Evidence indicated a few snowmobilers had harassed feeding wolves, scavenged the deer killed by the pack, or even killed wolves, particularly on the shallow bays of the park's large lakes (USFWS 1994). The U.S. Fish and Wildlife Service official biological opinion resulted in the closure of 17 bays in the park to snowmobiling. A report evaluating four years of observations of wolf activity and snowmobile use in bays that park managers had closed (some snowmobile use was recorded, despite closures) found that 93% of use by either was exclusive (NPS 1996). In other words, in 93% of the time, no wolf activity was recorded in the same time and space interval where snowmobile activity occurred. These data support the U.S. Fish and Wildlife Service's original hypothesis that access by snowmobiles was disturbing wolves. Each year the park superintendent determines whether all, some, or none of the bays require closure to protect the park's wolf population. In the winter of 2000–2001, 11 bays were closed to snowmobilers (NPS 1999b).

**Canada Lynx (*Lynx canadensis*).** The Canada lynx is a rare forest-dwelling cat whose range extends from Alaska throughout much of Canada, and into boreal forests (the boreal transition forest typical of the park) and high-elevation lands in the Rocky Mountains and Cascades. The lynx was listed as a federal threatened species in April 2000. Downed logs and windfalls typical of the boreal transition forest (see "Vegetation" for more information) provide cover and denning sites. Lynx home ranges vary in size and have been documented between 3 and 300 square miles (USFWS 2000). The lynx's primary prey is the snowshoe hare, which is also in the southern end of its range in the area of the park. In the contiguous United States, lynx populations occur only at low densities. The U.S. Fish and Wildlife Service has concluded that a very small resident population may exist in Minnesota, and that Voyageurs and Boundary Waters Canoe Area Wilderness are areas with the best lynx habitat in the state. The status of the population in the park, or even whether a population exists, is unknown (USFS 1999b; USFWS 2000).

#### State Species

The following species are listed by the state but are not protected; they are monitored and may become candidates for the federal listing. Species that occur in the park but would not be affected have been dismissed from further consideration (see discussion beginning on page I–28).

#### State Endangered Species

**Floating marsh marigold (*Caltha natans*).** Floating marsh marigold is an aquatic species that occurs in shallow water in creeks, pools, ditches, and sheltered lake margins. It typically roots in mud, silt, or clay, and it spreads by rooting at the nodes. It has five white, petal-like sepals, and leaves are simple and thin. Floating marsh marigold is rare throughout its range in North America, and particularly so south of the Canadian border, where it has been found only a handful of times, mostly in Minnesota.

#### State Species of Special Concern

These species have no formal status with the state of Minnesota, but they are rare or are monitored by the state or park staff. Species that occur in the park, but would not be affected have been dismissed from further consideration (see discussion beginning on page I–28).

**Northern Bog Lemming (*Synaptomys borealis*).** It is unknown whether the northern bog lemming exists in the park. Where it occurs, this small, mouselike mammal inhabits tamarack and spruce bogs and wet grassy meadows, and feeds on grasses, sedges, and leaves of bog heath shrubs, including blueberries (Heinselman 1996).

**White Pelican (*Pelecanus erythrorhynchos*).** Surveys of white pelican populations in North America suggest extensive changes have taken place in their distribution and size since the early 1900s. By 1932 no pelican breeding colonies existed in Minnesota. By the mid 1970s, this species had reestablished breeding colonies in two spots in Minnesota. A breeding colony was also well established on the Ontario side of Lake of the Woods, about 100 miles west of the park by this time (NPS 1994a; Kallemeyn, pers. comm. Nov. 1999). Park employees have observed a significant increase in the number of pelicans visiting the park area during summers since 1973 and have assumed that these foraging birds originate from the Lake of the Woods colony. Breeding areas for pelicans may exist in the park, and future colonies may become established inside its boundaries.

**Snapping Turtle (*Chelydra serpentina*).** The snapping turtle is a large freshwater turtle that inhabits permanent bodies of fresh water. Turtles live in water or bury themselves in mud in shallow water with only eyes showing. On land they may strike repeatedly. Snapping turtles are omnivorous, eating aquatic invertebrates, fish, reptiles, birds, small mammals, carrion, and vegetation.

**Lapland Buttercup (*Ranunculus lapponicus*).** This is a perennial herb found in cedar swamps and bogs (Chadde 1998). It is rare in Minnesota and occurs primarily in the boreal forest.

**Other Species.** The park has habitat and is within the range of three additional mammals of state special concern — the mountain lion (*Felis concolor*), smokey shrew (*Sorex fumeus*), and least weasel (*Mustela nivalis*). However, none has been seen or captured (during park monitoring studies) in many years.

# CULTURAL RESOURCES

Human occupation and use of Voyageurs National Park spans nearly 10,000 years from Paleo-Indian through Archaic, Woodland, and historic-era groups. Aboriginal peoples followed a pattern of seasonal rounds to take advantage of the region's diverse plants, animals, fish, and other resources. Europeans, with different values and different objectives, arrived in the late 17th century, beginning the vast, intercultural commerce system of the fur trade, which the park was established to commemorate. After 200 years, the fur trade ended, and the resources of the area caught the attention of homesteaders, miners, loggers, commercial fishermen, and recreationists.

This perennial legacy of human occupation is represented in changes in the landscape, in hundreds of archeological sites and historic structures, and in the enduring traditions of people long associated with the land.

## CULTURAL HISTORY OVERVIEW

The earliest human occupation of Voyageurs National Park is thought to have started during the Paleo-Indian Period (ca. 9700–8000 B.C.) when groups began entering the region following the drainage of glacial Lake Agassiz. Paleo peoples in the region are thought to have been highly mobile, living in small, scattered bands and following a seasonal pattern of gathering various plants, fishing, and hunting a variety of mammals, such as mammoth, caribou, deer and beaver. Although no Paleo sites have been positively identified within the park, Paleo-age tools from the area are present in private collections.

Archaic Period (ca. 8000 B.C.–100 A.D.) inhabitants also followed a mobile hunting-gathering lifestyle, although with more regular seasonal rounds, coupled with greater site permanence and range reduction. There is a marked focus on fishing and a more diversified tool assemblage suggesting greater use of plants, such as grinding stones, adzes, and gouges. Two sites with Archaic components have been positively identified within the park; one site is listed on the National Register of Historic Places.

The use of ceramics, the construction of burial mounds, greater dependence on wild rice, and the use of small side-notched and triangular projectile points, as well as a variety of stone, bone, and copper tools are the hallmarks of the Woodland period (ca. 100–1700 A.D.). The Woodland period in this region is divided into Initial (Laurel phase, ca. 100–900 A.D.) and Terminal (Blackduck, Selkirk, and Sandy Lake phases; ca. 700 A.D. — European contact) subperiods, and are largely differentiated by ceramic style and technology. Of the 228 pre-contact archeological sites identified within the park, approximately 80 sites contain Laurel components, 78 sites contain Blackduck components, 8 sites have Selkirk components, and 16 sites have Sandy Lake components. Currently, five of the pre-contact sites (all multi-component sites) are listed on the National Register of Historic Places.

The earliest European exploration of the Voyageurs National Park area is believed to have occurred about 1688, when French explorer Jacques de Noyon wintered along the Rainy River. The French, prompted by competition over the diminishing supply of furs in the east, were the first Europeans to explore the northwest territory and to engage the indigenous peoples, principally the Cree, Monsoni, Assiniboin, and later the Ojibwe, in the trade of furs on a commercial scale. In 1763 the French ceded control of the fur trade to the British as a consequence of the French and Indian War.

Currently, only a small number of artifacts associated with the fur trade have been found in the park. These artifacts have all been recovered from historic Native American sites. Written documentation of known voyageur routes suggests that several other types of sites related to the early fur trade should exist within the park, including temporary trading sites, bartering stations, evidence of winter expresses, and overnight voyageur stops.

The European trade in furs depended heavily on the native residents of the Rainy Lake area. The Cree, Monsoni, and Assiniboin were the primary inhabitants of the region at the time of initial European contact. By the mid-18th century, however, the Cree, Monsoni, and Assiniboin largely abandoned the Rainy Lake area, leaving the region open for settlement by the Ojibwe. By 1780 the Ojibwe had become the primary residents of this border region and played a key role in the region's commerce as suppliers of food and furs, guides, communication links, and canoe suppliers because they had an intimate knowledge of geography and resources crucial to the traders.

During the latter half of the 19th century, the Ojibwe seldom resided at their designated reservations. Due to the apparent lack of economic opportunity on the reservations, their traditional semi-nomadic lifestyle, and the fact that their former homelands had not yet been settled, the Ojibwe preferred to live in seasonal settlements scattered across northern Minnesota and Canada. Several of these settlements were within the present-day boundaries of the park at Moose Bay (Namakan Lake), Gold Portage (western Kabetogama Lake), Crane Lake, and Kettle Falls. These settlements remained a familiar part of everyday life in the boundary waters area until the Ojibwe were permanently relocated to the Nett Lake Reservation in the 1920s.

Thirty sites within the park have historic Native American components. In some cases, historic Native American sites within the park can be associated with specific individuals and families, such as the Woodenfrog family. All but one of these 30 known historic Native American sites are habitation sites. Records suggest, however, that special use sites relating to wild rice processing, temporary hunting/fishing camps, maple sugar extraction, canoe making, and cemeteries are known to exist within the park. One site with a historic Native American component is listed on the National Register of Historic Places.

Many historic period resources in the park are related to the extraction of resources, such as mining, lumbering, and fishing. Gold in the boundary waters area was first discovered near Vermilion Lake in 1864 and later at Little American Island on Rainy Lake in 1893. Rainy Lake City on Black Bay was incorporated on May 17, 1894, and quickly became the center of a short-lived mining boom. Two mining properties within the park are listed on the National Register of Historic Places. Little American Gold Mine, listed in 1975, was not only the site of the first discovery of gold on Rainy Lake but the only profitable mining venture in the area. The Gold Mine Historic District, listed in 1977, is comprised of seven different mines along the shores of Rainy Lake. The Rainy Lake City Saloon, built ca. 1910, is the only remaining structure at Rainy Lake City. Though located in this historic gold mine town, it is primarily notable for its later role during Prohibition. The saloon was determined eligible for the national register in 1992, and its exterior was restored in 1997.

The depletion of the large stands of white pine in Michigan, Wisconsin, and central Minnesota through logging led to the northwesterly expansion of the lumber industry. After the initial logging frenzy in the 1880s and 1890s had ended and local sawmills were established, two logging monopolies soon developed in the area. The International Lumber Company operated primarily in Koochiching County and transported timber to sawmills at International Falls and Fort Frances until 1937. In order to meet the constant water supply needs of these mills, dams were constructed at International Falls, Kettle Falls, and Squirrel Falls in the early 1900s. The Virginia & Rainy Lake Lumber Company controlled much of the area to the east in St. Louis County and conducted much of its operations until 1929 by rafting logs to Hoist Bay, where they were then taken by train to sawmills in Virginia, Minnesota.

To date 27 of the 40 known Virginia & Rainy Lake Company logging camps have been identified. None of the International Lumber Company or smaller independent logging company sites has been located or investigated. The Kettle Falls Dam, though listed as part of a larger historic district, is the only logging-related property within the park that is on the National Register of Historic Places. The dam is owned by Boise Cascade and is situated in both the United States and Canada.

With the decline of the initial logging boom in the 1890s, commercial fishing became a primary economic activity in the area. Large-scale fishing operations began on the Rainy River as early as 1892. At its peak in the late 1890s and early 1900s, roughly seven or eight large-scale fishing companies operated in the area, primarily on Crane Lake, and were principally involved in the production of sturgeon caviar. Due to the great distances of their main markets and the lack of refrigerated transportation, these enterprises were relatively short-lived, though some remained in limited operation until the 1930s. Small-scale family fishing soon developed as a result, with the largest number of licensed family operations in the area reaching 48 in 1910. These family operations depended on local auctions at Kettle Falls to sell their catch. Commercial fishing was banned on Kabetogama Lake in 1923, and by 1942 only 10 licensed family operations were active in the area. Today, only two operations are licensed to fish within the park; these licenses will end when the current operators no longer fish.

At least 27 commercial fishing ventures, as well as numerous smaller family businesses, operated within the park boundaries, and evidence of camps and net-tarring sites can be found. Only one commercial fishing site within the park, the ca. 1950s Oveson Camp, has been determined eligible for listing on the National Register of Historic Places.

During the 1920s and 1930s, in response to concerns about depleted forest resources, considerable problems with tax delinquency in northern Minnesota, and a growing interest in recreation, particularly hunting and fishing, the state began to buy lands back and turn them into state parks, forests, and wildlife reserves. Programs were established to help restore and protect forest resources, to foster a conservation ethic, and to promote tourism. The Civilian Conservation Corps (CCC), working with the Minnesota Forest Service, had a profound effect on the environment, beginning its involvement in the Kabetogama and Rainy Lake areas in 1933. Noteworthy CCC accomplishments within the current park boundaries include the construction of the Kabetogama Ranger Station complex for the Minnesota Forest Service in 1935, as well as the saving of the Kettle Falls Hotel during the 1936 wild fire. The corps also constructed a number of public campgrounds, including Chief Woodenfrog and King Williams Narrows, as well as numerous smaller campsites and public landings on the area lakes. Additional CCC activities included tree plantings, wildlife counts, timber surveys, and fire protection projects.

Several historic properties associated with the conservation and CCC-related history of the area have been identified within the park. These properties are listed on the National Register of Historic Places as structures that are part of two larger historic districts. The Kettle Falls Historic District, listed in 1978, includes the ca. 1910 dam, log cabin, and horsebarn; the ca. 1945 dam tender's cabin and shed; and four post-1960 dependencies, including a fishhouse, garage, boathouse, and shed. The Kabetogama Ranger Station Historic District was listed in 1993 and consists of six 1930s, CCC-constructed structures, including the ranger station, boathouse, warehouse, oilhouse, privy, and a stone retaining wall. The district also includes the ca. 1921 Minnesota Forest Service patrol cabin and privy that the 1930s-era structures were built to replace.

These government-supported conservation efforts, the promotion of hotels and resorts in the Rainy Lake area, and the opening of Minnesota State Highway 11 (now U.S. Highway 53) in 1923 served to increase use of the border lakes for canoeing, motorboating, and other forms of recreation. The

Minnesota Forest Service's practice of leasing homesites on area lakeshores also helped open the area for recreational purposes between 1930 and 1950. By the time Voyageurs was established as a park in 1975, there were over 60 resorts surrounding the park, with 12 resorts and 97 leased cabin sites, and over 120 privately owned recreational properties within the park's boundaries.

While numerous recreational sites, including summer cabins and resorts, abound throughout the park, only two properties are currently listed on the National Register of Historic Places. The Kettle Falls Hotel was listed in 1977. Built in 1910 to house loggers, fishermen, and recreation seekers, the hotel has been rehabilitated and operates today as the only historic lodge within the park. The Jun Fujita Cabin, which also includes a non-contributing privy and dockhouse, was built in the 1920s by the noted Japanese-American photographer for the *Chicago Tribune* and was listed in 1996. The National Park Service recently completed a historic context study for recreational resources entitled, "Tourism and Recreational Development in the Minnesota Border Lakes from the 1880s through the 1950s," which assisted in evaluating other recreational resources (Sanford 1999). An additional 21 properties associated with recreation in the park have been determined eligible for listing on the national register.

## ARCHEOLOGICAL RESOURCES

The archeological inventory of the park is incomplete. Approximately 6,000 acres within the park have been archeologically surveyed, resulting in the identification of 358 sites. Approximately 228 of these are pre-contact sites that span the Archaic through historic Native American occupations of the park. Nearly all of the pre-contact archeological sites identified within the park are adjacent to rivers and lakes. Approximately 130 sites in the park contain historic components, 82 of which are single-component historic sites. These include sites relating to Native Americans, mining, logging, fishing, and homesteading.

A variety of adverse impacts to archeological sites within the park have been identified. Erosion caused by inundation, wave action, and fluctuating water levels continues to be the leading threat to archeological resources within the park. Approximately three-fourths of all identified sites within the park are along lake shorelines and are thus the most vulnerable to erosional and development-related impacts. Of the 358 known sites, approximately 106 are being actively disturbed by erosion. Stabilization measures using matting, riprap, and native vegetation plantings have been implemented at 4 sites, while 13 more have been identified as candidates.

Development and visitor-related impacts to archeological sites resulting from picnicking and camping on undesignated campsites stem from the excavation of fire-pits, tent drainage trenches, trampling, and other ground-disturbing activities. Other adverse impacts include the illegal collection of artifacts, vandalism, watercraft mooring, and wildfire suppression. Of the 358 archeological sites, a total of 28 sites are at developed sites, and 88 are at popular undeveloped sites.

Earthen embankments that represent the structural remains of buildings from logging camps and historic Ojibwe sites are threatened by vegetation. Trees grow on the earthen berms and are then uprooted during windstorms, damaging sections of earthen wall.

## HISTORIC STRUCTURES

The inventory of structures in the park is largely complete. The inventory evaluated 600 structures located on over 400 properties. Thirty properties with 135 structures have been determined eligible for listing on the National Register of Historic Places. These properties relate primarily to the theme of recreation but also to early settlement, conservation, and commercial fishing. The park's List of

Classified Structures, which is an NPS database of properties eligible for the national register, is up to date.

Due in large part to a lack of funding and staff, stabilization and restoration work on structures to date has necessarily focused on structures that are used or interpreted by park staff. These include the Kettle Falls Historic District and Meadwood Lodge (the Ash River visitor center). Work has also been done in response to maintenance emergencies, damage through vandalism, and visitor complaints.

Several properties are in private ownership; many are leased through use and occupancy reservations, which will expire in the next few years and by law cannot be renewed. Finding uses for vacated historic properties, particularly recreational cabins, presents a challenge to park managers. Some properties have been identified as future visitor destinations and would serve as focal points for interpretation. Other properties have benefited from preservation funding, but lack visitor facilities and interpretive media. Funding shortfalls have resulted in minimal attention to two large complexes, the former I. W. Stevens and Hoist Bay resorts. Although the use of properties would provide the greatest level of preservation and protection, major work would need to be accomplished first and appropriate uses have not been identified.

## CULTURAL LANDSCAPES

Cultural landscapes are broadly defined as geographic areas that include both natural and cultural resources, and the wildlife or domestic animals therein that are associated with a historical event, activity, or person, or that exhibit either cultural or aesthetic values. The National Park Service recognizes four types of landscapes: historic sites, historic designed landscapes, historic vernacular landscapes, and ethnographic landscapes.

Voyageurs National Park was one of the test parks for the Midwest Region's cultural landscape inventory program begun in 1992. One cultural landscape, the Ellsworth Rock Garden, has been determined eligible for listing on the National Register of Historic Places. An additional 21 landscapes are potentially eligible. The majority of these are historic vernacular landscapes associated with the Euro-American era, such as fishing and logging camps, recreation cabins, and gold mine related sites. Potential cultural landscapes are also located in the Kettle Falls Historic District, at Rainy Lake City, and along the historic waterway of the fur trade.

The "Preservation Treatment Plan" for Ellsworth Rock Garden was approved in 1998, and initial restoration work (in the form of a community project to clear nonhistoric vegetation) has already begun.

Although no ethnographic landscapes have been identified, given the strong tie of the Ojibwe to the land within the park, the potential exists. These values may best be assessed through an ethnographic landscape study.

## COLLECTIONS

Voyageurs National Park's museum collections include only those objects that are significantly associated with the events, activities, and people of the park's history. These objects include natural, cultural, historical, and ethnographic resources. The museum collection is currently comprised of 10,023 catalogued objects.

157

The natural history collection consists primarily of a herbarium collection, geological samples, and clam specimens. Currently, 135 geological samples collected under a research permit are stored at the University of Minnesota in St. Paul, while 140 clam specimens are being curated at the Science Museum of Minnesota in St. Paul.

The cultural history collection consists of archeological, historical, archival, and ethnographic objects. Archeological artifacts in the collection are comprised largely of the 6,535 objects curated at the NPS Midwest Archeological Center in Lincoln, Nebraska. Approximately 120 objects (mostly furnishings) make up the Kettle Falls Hotel collection. Currently, 24 furnishing items remain at the hotel in their original settings as objects used to interpret the hotel's history. The history and archival collections consist of numerous photographs, maps, and books. The ethnographic collections are comprised of 21 objects, primarily beaded garments and basketry, relating to the Ojibwe of northern Minnesota.

The museum collections that are curated at the park are all housed in a new storage facility built in 1995. The new storage facility contains adequate temperature and humidity controls, as well as fire suppression and security systems. Dedicated space for object curation and curatorial work is also adequate. Accession records and object cataloging, however, are not up-to-date and require reconciliation with computerized records. The greatest curation need is sufficient staffing to handle daily maintenance and record keeping.

## ETHNOGRAPHIC RESOURCES

Research designed to provide a preliminary ethnographic overview and assessment, to identify Native American groups that may be culturally affiliated with Voyageurs National Park, and to identify the type and location of ethnographic resources was begun in 1997. A preliminary overview of the cultural resources that have value and importance for today's Native American people is being prepared and is scheduled to be completed in FY2001.

Several categories of ethnographic resources important to Ojibwe people are present at the park and are potentially impacted by NPS management decisions. These include archeological sites, plants, animals, and bodies of water, ethnographic places, and ethnographic landscapes.

### ARCHEOLOGICAL SITES

Several historic archeological sites are considered potential ethnographic resources because of their historic Ojibwe connections. Several areas and features are related to the last Ojibwe occupation of the area. There are several village and habitation sites, five cemeteries, and other Native American graves.

One area of habitation in the park was occupied by a group of Ojibwe who continued to use their traditional homeland long after they had been officially designated to live at the Bois Forte reservation at Nett Lake by the Treaty of 1866. The area was continually used through at least 1913, but was abandoned as a living site by 1947.

### PLANTS

Plants are a very important category of ethnographic resource. Given the long and intense occupation of the Voyageurs area by Native American people through the centuries, numerous species of plants that have a history of Native American uses are expected to be found. At least 316 plant species present in the park have documented Indian uses. Of these, 161 species are known to have specific Ojibwe use for food, medicine, ceremonies, utilitarian, and other uses.

### ANIMALS

Numerous species of fish present in the Voyageurs area are classifiable as ethnographic resources. Species identified in recent ethnographic work with Ojibwe groups include sturgeon, walleye, northern pike, and trout. Some of these species, in particular the sturgeon and muskie, are identified as affiliated with specific Ojibwe clan groups.

Other species of animals that have spiritual, ceremonial, or cultural importance to the Ojibwe people are eagles, hawks, muskrats, turtles, rabbits, porcupines, skunks, foxes, martens, minks, weasels, squirrels, ducks, geese, deer, bear, wolves, moose, loons, partridge, beaver, and hummingbirds.

### BODIES OF WATER

Most of the lakes, rivers, and streams in the Voyageurs area have social and cultural attributes that make them identifiable as ethnographic resources. Several can be identified as part of larger ethnographic landscapes.

### ETHNOGRAPHIC PLACES AND LANDSCAPES

Several locations in the park are potentially ethnographic landscapes and places of importance to the traditionally associated Ojibwe.

*Chief Woodenfrog Island* — Chief Woodenfrog Island is located at Gold Portage, which connects Kabetogama Lake with Black Bay. Kabetogama Lake contains several important species of fish, including walleye, northern pike, smallmouth bass, and yellow perch. Chief Woodenfrog Island is a unique landscape within the larger ethnographic landscape of Kabetogama Lake. The island is recognized for its important ceremonial use within the Ojibwe Midewin religion and was used by Ojibwe people into the 1930s. Participation in the ceremonial cycle at Chief Woodenfrog Island extended to Ojibwe people from as far away as Madeline Island near Apostle Islands National Lakeshore, and Sault St. Marie.

*Namakan Lake* — The entire area of Namakan Lake is an ethnographic landscape that contains numerous other ethnographic places and landscapes, such as Moose Bay and Moose River, Sweetnose Island, Cemetery Island, Big Sky Island, and Namakan Island.

Of particular importance in this landscape are the painted pictographs at Moose River. These pictographs have important spiritual, ceremonial, and cultural meanings to today's Ojibwe people. The Moose River was identified during a recent NPS ethnography project as an important stopping place along the route from Ely to Grand Portage.

*Rainy Lake and Cranberry Bay* — Rainy Lake, described in Ojibwe story and song, comprises an ethnographic landscape that reflects the cultural importance of the entire western and northern sections of Voyageurs National Park. Cranberry Bay is one example of the range of ethnographic resources found in the park. This bay area is important because of its richness in Ojibwe resource use (wild rice, blueberries, cranberries, fish, and game), its location along a major travel route on Rainy Lake (especially as a shortcut during the winter), and its connections to Kabetogama Lake and Black Bay. Cranberry Bay was used for ceremonial activity and is the present location of eagle nests, which are very important to Ojibwe today. People from Nett Lake would come to Black Bay and Cranberry Bay to gather wild rice, which ripened earlier here then it did at Nett Lake.

# VISITOR USE AND FACILITIES

## VISITATION AND VISITOR USE

Estimating total park visitation at Voyageurs is methodologically challenging. Variance in annual park attendance is generally a product of seasonal influences that include snow accumulation, frozen lake surface conditions, annual size of fisheries, and weather variables. The National Park Service has established an estimation protocol based on a computerized manipulation of several data sources such as aerial surveys, visitor counts, and trail and road counts for assessing visitation levels. Although the correlation model was developed using these data sources, visitation data are currently extracted from visitor counts at the Rainy Lake visitor center. The current methodology for tracking park guests provides limited visitor use information for aiding in park management decision making. A comprehensive database concerning visitor use patterns, visitor needs, and visitor experiences is unavailable. Visitor surveys conducted during recent years provide another means of quantifying visitor use and recreation participation levels. However, due to the lack of more accurate methods of collecting quantifiable data, estimates and quotas should be interpreted with discretion. The park is currently in the process of reexamining and refining methods for counting visitors. (For accurate description of visitor tracking methods, see "Part II: Visitor Use and Facilities Plan.")

### PARK VISITATION TRENDS

Table 12 shows that park visitation generally rose from 1983 through 1987. After this period visitation leveled off to an estimated 242,000 visitors per year, which was generally sustained for the next 10 years (see figure 1). Fluctuations in the 1995–97 period were attributed to low snowfall at Voyageurs and other parts of Minnesota, which affected snowmobile activity in the park. Data for the years 1980 and 1981 have been omitted from the table because they were produced by a different counting method than the method used after 1981 and were vastly different after 1983. The method of estimating the number of annual visitors has been revised several times since 1976, but has been consistent since 1992.

TABLE 12: ANNUAL VISITATION, VOYAGEURS NATIONAL PARK

| | | | |
|---|---|---|---|
| 1983 | 164,209 | 1992 | 244,503 |
| 1984 | 195,731 | 1993 | 245,249 |
| 1985 | 211,855 | 1994 | 240,088 |
| 1986 | 184,849 | 1995 | 226,104 |
| 1987 | 218,434 | 1996 | 260,228 |
| 1988 | 240,621 | 1997 | 226,563 |
| 1989 | 231,740 | 1998 | 240,661 |
| 1990 | 243,022 | 1999 | 246,749 |
| 1991 | 252,847 | 2000 | 238,703 |
| 1983–2000 Average: 244,137 | | | |

Source: NPS Public Use and Statistics Office 2001; available at <http://www2.nature.nps.gov/npstats/parkrpt.cfm>.

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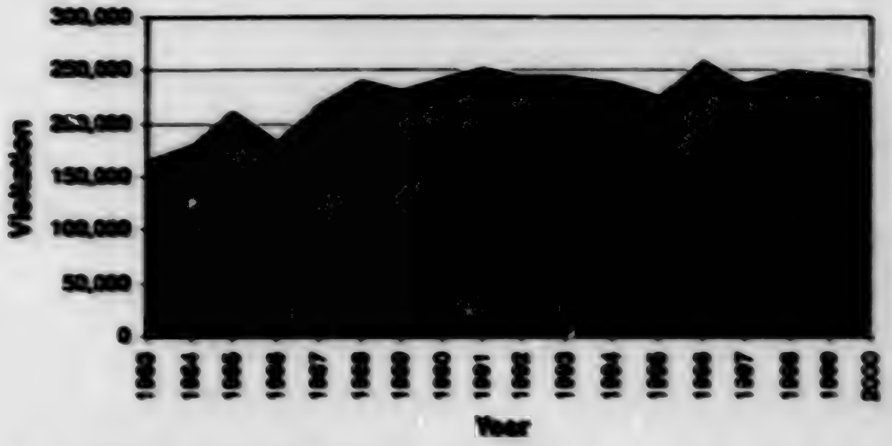
FIGURE 1: ANNUAL VISITATION, VOYAGEURS NATIONAL PARK



Source: NPS Public Use and Statistics Office 2001; available at <http://www2.nature.nps.gov/npstats/parkrpt.cfm>.

## GENERAL PATTERNS OF VISITOR USE

Promoted as an all-season park, Voyageurs is open year-round, yet it has a strong seasonal attendance pattern. On the average, approximately 60% of annual visitation occurs between May and September. Winter use is somewhat less; however, increasing visitation has been observed in recent years, especially on weekends. Visitation is lowest during shoulder seasons, when access to the park is curtailed by freeze-up in late fall and ice-out in early spring.

The park and the surrounding communities offer a full range of high-quality recreational opportunities that cater to families. The majority of visitors travel in family ([illegible]) or peer groups of two to four people (66%). During a week in July or August the principal user group includes persons 36–50 years old (34%), while only 19% of users are in the 21–36 age group (Littlejohn 1998).

Visitation to Voyageurs primarily comprises residents from a four-state region that includes Minnesota (60%), and Illinois/Iowa/Wisconsin (20%) according to one park survey (Littlejohn 1998). These patterns are substantiated by other park surveys of houseboat renters and resort patrons. Less than 1% were international visitors (Vlaming 1996).

Winter visitors include a greater percentage of Minnesota residents than summer visitors. Of visitors who participated in a snowmobile survey, approximately 86% were state residents; about 29% were local/regional visitors; about 13% were from the remainder of northern Minnesota; and nearly half (44%) reported residence from the Twin Cities area or southern Minnesota. Only 14% of the sample were out-of-state residents, mostly from neighboring states as well as Canada (Lime and Lewis 1995).

Many summer visitors have come to the park before. Of the summer visitors surveyed, 66% had visited during the previous five years (Littlejohn 1998). Of winter season snowmobilers surveyed, about one-third were characterized as repeat visitors. An additional third (29%) were visiting the park for the first time. In another survey over two-thirds (68%) of the respondents reported no previous visit the park during the summer use season (Lime and Lewis 1996).

Given the somewhat isolated location of the park, the nature of recreational opportunities, and packages offered by resort and houseboat companies, the typical length of stay at Voyageurs is several days. One survey revealed that 55% of visitors stay three or more days in the park, and 21% spent

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seven or more days in the park. In contrast to visitors that remain in the park for a longer duration, approximately one-third (35%) of summer visitors spent one day or less in the park. Of this group, about half (47%) spent less than a half day (4 hours or less; Littlejohn 1998).

By contrast, the duration of stays during winter differs significantly from the summer season. While most local/regional snowmobile participants are day users, other visitors reported an average of 2 to 3 days snowmobiling in the park (Lime and Lewis 1995).

## VISITOR MANAGEMENT AND DEVELOPED FACILITIES

### ENTRY FEES AND PERMITS

Voyageurs is one of six national parks that does not require entry/use fees or a reservation/permit system, and that allows visitors to camp on a first-come, first-served basis at sites of their choosing. A high degree of spontaneity and flexibility in selecting an overnight site is afforded by the absence of a reservation or permit system. Of these six parks, Voyageurs maintains the most extensive developed and overnight facilities.

Visitors cannot reserve overnight sites prior to arriving at the park and are not assured that developed sites will be available. This is especially frustrating for those who have traveled lengthy distances to visit the park and desire assurance of locating an unoccupied developed tent or houseboat site. At times, sites are claimed several hours to days in advance of actual occupancy. The use of undeveloped sites is permitted, although some visitors are unaware of this opportunity.

Compared to neighboring Boundary Waters Canoe Area Wilderness and Quetico Provincial Park — which require fees, permits, reservations, and extensive trip planning — Voyageurs affords a relatively uncomplicated and affordable destination for visitors who vacation in northeastern Minnesota.

### PARK ACCESS

#### Transportation to the Park

The majority of visitors approach the four park gateway communities by private vehicle from four points along U.S. 53. The primary urban area near the park is International Falls, which is a 5.5-hour drive from Minneapolis/St. Paul, a 3-hour drive from Duluth, and a 4-hour drive from Winnipeg. Travel time to various gateway communities from metropolitan areas may vary. Voyageurs is closer to other major urban centers such as Milwaukee and Chicago than many of the western national parks.

In addition to private automobile transit, a small percentage of visitors arrive on bus or van tours. This number will likely remain small given the isolated location of the park from other major tourist destinations and the distance from a major interstate highway (5 hours).

In addition to ground transportation, Northwest Air Link (operated by Mesaba Airlines) provides approximately six flights daily between International Falls and the Twin Cities (30-passenger planes). Given the fact that many visitors transport their own recreational equipment (motorboat, snowmobile, canoe), coupled with the perception of inconvenience or expenses involved with air transportation, it is probable that a limited number of visitors travel to the park by air transportation.

Currently, entry roads to Rainy Lake and Ash River visitor centers are not designed for use by bicyclists and pedestrians, creating unsafe conditions and an unpleasant experience for visitors who arrive by nonmotorized means. Although a separated trail extends from International Falls to the east, the pathway terminates near the Rainy Lake visitor center entrance.

### Park Access

The interior of Voyageurs National Park is reached from numerous entry points along the park's boundaries by means of watercraft during warmer seasons and snowmobiles during winter. Many private lodges along the park's waters provide direct access to the park for guests. The National Park Service maintains public boat launches adjacent to each visitor center. Presently, motorized and nonmotorized users share public launch areas. The boat launch at Ash River, which was improved in 1996, is the park's most popular access point.

## VISITOR CENTER FACILITIES

Park visitor centers serve as a hub of activity for visitor orientation and information, as well as the interpretation of park resources. At Voyageurs, three visitor centers and one ranger station serve as a readily identifiable symbol of the National Park Service and make it possible for visitors to feel that they have arrived at the park. Of repeat visitors, 62% reported spending time at a park visitor center (Littlejohn 1998).

Of annual patrons who visit the three centers, the facility at Rainy Lake receives just under half (44%), while Kabetogama Lake receives 29% and Ash River 25%. Visitation levels are highest between June and August, when approximately 75% of total annual visitor center use occurs.

In one park survey park guests evaluated several important aspects of visitor centers, including personnel, assistance from employees, and ranger/volunteer-led programs. Services at visitor centers that received "high quality" ratings but were more moderate in importance included visitor center book sales areas, the park orientation film, and exhibits (Littlejohn 1998).

Over half (59%) of visitors polled made use of visitor information and ranger services available at Voyageurs. Personnel (both visitor center and other employees) were viewed by 80% of the survey respondents as providing "extremely and very important" services (Littlejohn 1998).

During the main season of use, visitor centers often become crowded and are unable to accommodate large groups for interpretive programs. Additionally, exhibit space is limited in three of the facilities, and staff workspace is confined.

Parking, including for visitors with physical disabilities, is available at all visitor centers.

### Rainy Lake

The visitor center at Rainy Lake, which opened in 1987, overlooks Black Bay 11 miles east of International Falls and is easily accessed from State Highway 11. Open year-round with limited hours during the winter season, this facility provides visitors with park information, books, and souvenirs, and it affords opportunities to view a park slide show and video, examine natural/cultural history exhibits, and depart for a variety of naturalist-led programs. The Rainy Lake basin concession tour boat also operates out of the visitor center. Public facilities at Rainy Lake are primarily used by visitors entering the park by way of International Falls or resorts on Rainy Lake.

The Rainy Lake visitor center complex also includes a paved boat launch and 40 parking spaces for vehicles with trailers, 51 automobile parking spaces, a picnic area with restrooms, docks for day use, an observation deck, and a nature trail. During the peak season parking lots fill up, and people park and walk along the entrance road. For NPS operations the complex is also equipped with a well-water and septic system, a cold-storage building, and a fuel station.

Although the Rainy Lake visitor center is spacious, the building becomes crowded with visitors between June and August, when over 75% of total annual visitation to this facility occurs.

### Kabetogama Lake

The Kabetogama Lake visitor center, which opened in 1988, is located along the southwest shore of the lake, and is accessed from County Road 123. The visitor center is constructed on the site of a former visitor center facility that was established in 1978 and destroyed by fire in 1986. The visitor center is open daily from May through September, and it serves as the meeting place for several naturalist-led programs. Visitors can obtain park information, purchase books, examine various exhibits, and view an orientation slide show and video. The Namakan basin concession tour boat operates from this location.

Other public facilities at this complex include a paved boat launch, 25 parking spaces for vehicles with trailers, 4 parking spaces for automobiles, and docks for day use. Motorboaters heavily use the launching facilities during summer, and snowmobilers during winter.

The developed area includes several historic structures that comprise the Kabetogama Ranger Station Historic District. These historic structures were constructed between 1921 and 1941 and provide space for maintenance and operations, storage, and seasonal housing.

The Kabetogama facility is limited in exhibit space and can only accommodate groups that do not exceed 20 persons. Given these limitations, interpretive programs and ranger-led canoe trips are organized at the state's Woodenfrog Campground, which is near the visitor center.

### Ash River

The Ash River visitor center, which was renovated and reopened in 1990, is 3 miles north of County Road 129 (Ash River Trail) on the Meadwood Road. It is housed in the historic Meadwood Lodge, formerly a private resort, and is open daily from May through September. In addition to providing general services, this facility serves as a hub for a nature trail, three overlooks with short trails (portions are wheelchair accessible), a concrete boat launch, a picnic area, and docks for day use. The visitor center area is also equipped with three parking areas that can accommodate 16 single vehicles and 50 vehicles with trailers. Additional parking is provided at the forest overlook trail and beaver pond overlook (8 vehicles with trailers and 20 autos), and the Kabetogama Lake overlook/trail (3 vehicles with trailers and 12 autos). During peak seasons, especially holiday weekends, parking facilities often reach capacity, and visitors must park and walk along Ash River Road.

While the Ash River facility provides a place for visitors to congregate, interior space in this historic lodge is confined.

A historic structures report for the Ash River area is scheduled to be completed in 2001. It will contain plans for expanding interpretive capabilities with the construction of a rustic amphitheater, outdoor exhibits, and a formal area outside the lodge where groups can gather for programs. A small cabin west of the lodge, which currently serves a critical housing need, could in the future accommodate growing visitor use needs.

166

### Crane Lake

The Crane Lake community serves as a major hub for many summer recreationists who navigate the lakes of Voyageurs National Park or the Boundary Waters Canoe Area Wilderness, and for fixed-wing aircraft traffic at U.S. Customs. Crane Lake also attracts significant snowmobile use since the community lies at the juncture of several regional trail routes. Although the National Park Service does not own property in the Crane Lake community, the park leases a structure that primarily serves as a ranger contact station and ranger housing. Because the station is not highly visible, interior space is limited, no parking is provided, and hours of operation are sporadic, only a small percentage of total park visitors (less than 1% in 1997) use this facility. While two neighboring boat-launching facilities and parking areas allow for water access, park visitors may use areas for parking within the community that are inappropriate.

## VISITOR DESTINATION AREAS

Some visitors are more interested in going to particular destinations in the park than in participating in activities such as fishing or camping. To provide a greater variety of experiences for park visitors, specific destinations have been identified that can withstand visitor use and provide an alternative method of interpreting the natural and cultural resources of the park.

### Kettle Falls Historic District

The Kettle Falls Historic District is the major core of activity on the park's east end during the summer. The site includes the historic hotel (renovated in 1988), which provides 12 rental rooms and food and bar service; rental lodging units (40 guests maximum); and hotel staff housing. Additional facilities include an overlook at the historic dam, picnic grounds, docking facilities, a mechanical portaging service, and paths. According to one park survey, about one-third of respondents indicated that they make use of facilities and services at Kettle Falls (Littlejohn 1998).

The site is also a destination of both Rainy and Namakan District concessioner boat tours. Day uses include dining at the hotel restaurant or bar, picnicking, visiting historic structures, and refueling. Although opportunities for short walks are afforded at Kettle Falls, some visitors have expressed a desire for an expanded trail system on the Kabetogama Peninsula that would link the hotel complex to interior lake areas. The hotel, restaurant, and rental lodges are open seasonally from May 15 to mid October. Kettle Falls Hotel was open during the winters of 1992–93 through 1999–2000.

### Little American Island

Little American Island, part of the Rainy Lake Gold Mine Historic District, interprets the historic gold mining era of the 1890s. The site opened for public access in 1993 and is a popular destination for park visitors and boat tours. The infrastructure at this site includes boat docks, trails, and interpretive signs.

### Ellsworth Rock Garden

Ellsworth Rock Garden is the site of an elaborately terraced rock garden constructed between 1944 and 1965. The property comprises the gardens built on stone terraces, stone statuary, the Ellsworth workshop and privy, the foundation from the Ellsworth house, and a guest cabin that reportedly came from a nearby logging camp. Given the uniqueness of the site, the area is popular with day users and is a stop on concession boat tours.

## RECREATIONAL USES AND EXPERIENCES

Voyageurs is a motorized park that provides a range of recreational opportunities while preserving its cultural and natural resources. Motorized boats and snowmobiles are allowed within much of the park, making Voyageurs accessible to numerous people who would otherwise be unable to reach distant destinations. Various modes of travel throughout the park that include motorboat, houseboat, canoe, kayak, fixed-wing aircraft, and foot allow for diverse visitor experiences. However, unsafe and unpleasant situations between visitors using motorized and nonmotorized means to enjoy the park may occur if safety etiquette and user compatibility are ignored. Some visitors feel that noise from motorized uses reduces natural quiet. Noise can be even more disturbing in backcountry trail and primitive areas when visitors traveling by nonmotorized means are disturbed by fixed-wing aircraft or motorized boats. Motorized and nonmotorized watercraft must be launched from shared facilities, which creates safety concerns and visitor conflicts.

The most popular summer activities at Voyageurs center on the natural environment and scenic character of the park. They include viewing scenery (79%), viewing wildlife (77%), fishing without a guide (66%), nature photography, day hiking, short walks, camping, and visiting historic sites. Many park patrons seek restorative experiences that include solitude, observing scenic beauty, relaxing on beaches, and enjoying the natural environment (Littlejohn 1998).

Participation in winter activities primarily occurs between January and March. Winter use is dominated by snowmobiling, but also includes cross-country skiing, ice fishing, and snowshoeing. In conjunction with these activities, sightseeing, wildlife viewing, visiting Kettle Falls, and nature photography are popular winter pastimes. Although snowmobile use occurs throughout large portions of the park, the greatest concentration occurs on groomed trails in the Namakan basin. Ice fishing is more localized near the ice road access on west Rainy Lake. Visitation to the park during winter fluctuates dramatically as a result of snow and ice conditions. Given weather variables, the percentage of growth or decline of a particular winter activity over the course of a decade is difficult to compute.

## INTEGRATED SUMMER USE

Unlike neighboring preserves such as the Boundary Waters Canoe Area Wilderness and Quetico Provincial Park, Voyageurs accommodates a high level of motorized uses in the summer. Given the size of the park, the expansiveness of water bodies, and limited routes between major lakes, motorized recreational uses will continue to be major attractions for the park.

### MOTORBOATING AND HOUSEBOATING

Most visitors use motorized watercraft in conjunction with fishing activities. The nature of boating often requires that visitors own, maintain, or rent recreational equipment. Although motorboats comprise the majority of watercraft use, houseboats, canoes, kayaks, and tour boats are also used (Littlejohn 1998). Houseboat numbers counted in the Namakan and Rainy basins over the past 15 years are shown in table 13.

### TABLE 13: PEAK HOUSEBOAT NUMBERS

| | | | | | |
|---|---|---|---|---|---|
| 1986 | 15 | | 1986 | 19 | |
| 1987 | 18 | 20% | 1987 | 25 | 32% |
| 1988 | 25 | 39% | 1988 | 24 | -4% |
| 1989 | 18 | -28% | 1989 | 22 | -8% |
| 1990 | 19 | 6% | 1990 | 23 | 5% |
| 1991 | | | 1991 | | |
| 1992 | 24 | 26% | 1992 | 20 | -13% |
| 1993 | 31 | 29% | 1993 | 22 | 10% |
| 1994 | 31 | 0% | 1994 | 22 | 0% |
| 1995 | | | 1995 | 22 | 0% |
| 1996 | | | 1996 | 23 | 5% |
| 1997 | | | 1997 | 24 | 4% |
| 1998 | 36 | 16% | 1998 | 31 | 29% |
| 1999 | 36 | 0% | 1999 | 33 | 6% |
| 2000 | | | 2000 | 43 | 30% |

Source: Voyageurs National Park 2001.

Houseboats provide a means for a small group, a family, or several families to experience the park in a special way. Currently, two houseboat companies operate out of the Namakan basin, and two out of Rainy basin (see table 14).

### TABLE 14: HOUSEBOAT OPERATIONS WITHIN VOYAGEURS NATIONAL PARK

| | | | | | |
|---|---|---|---|---|---|
| Houseboat Companies / No. of Houseboats | 2 / 45 | 0 / 0 | 1 / 20 | 1 / 35 | 4 / 100 |
| Pillow Count (maximum people accommodated) | 410 | 0 | 166 | 300 | 876 |

Source: Voyageurs National Park 1999.

At present, there is no limit on the number of rental houseboats allowed in the park. There are 55 rental houseboats available in the Namakan basin and 45 rental houseboats available in the Rainy basin. Houseboating comprises 11% of total recreational activity; it has steadily averaged about 24,200 users per year during the previous 10 years.

Houseboaters are encouraged to moor at developed houseboat sites that can accommodate two houseboats each, although they may also moor along undeveloped shorelines or set anchor away from the land areas under most conditions. Some visitors feel houseboats monopolize overnight use areas and visually dominate water-related recreational uses, since park management policy allows unlimited numbers of boaters who can moor in developed and undeveloped areas.

According to a 1996 park survey, the majority of houseboat users also participate in motorboating, fishing, and enjoying the beaches. Most (58%) houseboat renters were first-time visitors to Voyageurs, which may infer that the houseboat experience is often thought of as a "once in a lifetime" trip due to its uniqueness and relatively high cost. However, repeat visitors may return an average of six times (Vlaming 1997).

Projections for houseboat use in the future, based on use since 1986, are shown for the Rainy basin and Namakan basin in figures 2 and 3 respectively.

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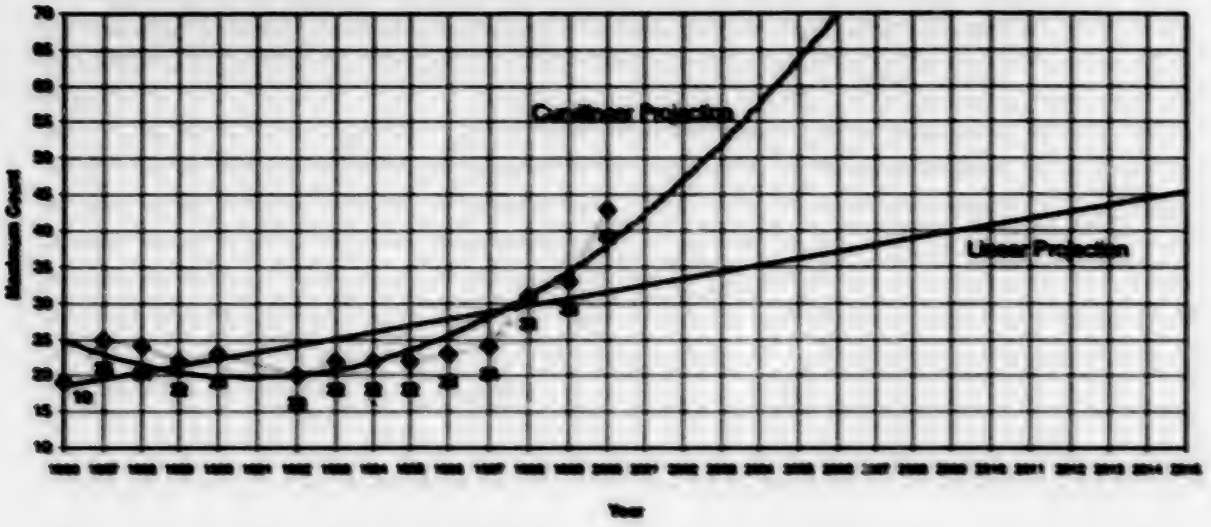
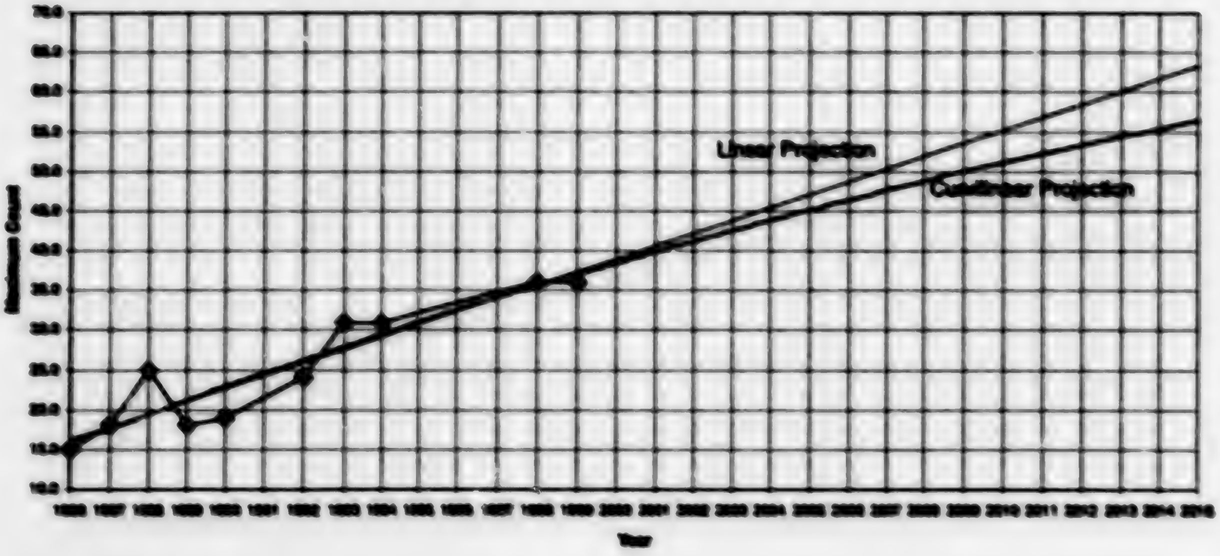
**FIGURE 2: RAINY BASIN HOUSEBOATS — 1986–2000 AND PROJECTED USE BY 2015**



NOTES: The curvilinear projection of the trend in maximum houseboat counts is based on aerial boat count surveys. This projection is a closer and more precise estimate. Given the curvature of the line, in 2015 the projection would reach 150 houseboats.

The linear projection of the trend in maximum houseboat counts is also based on aerial boat count surveys, but this projection is a more general estimate.

**FIGURE 3: NAMAKAN BASIN HOUSEBOATS — 1986–1999 AND PROJECTED USE BY 2015**



NOTES: The curvilinear projection of the trend in maximum houseboat counts is based on aerial boat count surveys. This projection is a closer and more precise estimate.

The linear projection of the trend in maximum houseboat counts is also based on aerial boat count surveys, but this projection is a more general estimate.

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### COMMERCIAL AND PRIVATE FIXED-WING AIRCRAFT USE

Fixed-wing aircraft are a traditional means of accessing remote areas in the northwoods region and afford another way for some visitors to experience the park. Private fixed-wing aircraft are permitted to land on the four major lakes and seven interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda). Currently, one airplane operator has an incidental business permit to shuttle visitors to Shoepack Lake. Voyageurs National Park operates one plane for conducting surveys, research, wildlife surveys, research, wildlife monitoring, law enforcement patrols, and search-and-rescue operations within park boundaries.

Fixed-wing aircraft comprise a relatively insignificant percentage of total use within the park. An estimated dozen private fixed-wing aircraft use the interior lakes during the summer, while some 50 individual private planes use the surfaces of the four major lakes (based on park ranger observations). However, noise, particularly in isolated areas, is perceived by some park guests as disruptive to the natural qualities of the park.

### SPORTFISHING

Sportfishing has traditionally been the primary recreational attraction at Voyageurs, comprising approximately half of the total recreational activity. The natural, undeveloped nature of the shoreline and the availability of developed sites for docking, picnicking, and camping contribute to this recreational experience. The major lakes are renown for producing record-breaking walleye and northern pike, while interior lakes maintain populations of native and stocked fish species, such as trout and smallmouth bass. Of visitors who responded to a survey question about "natural resources they most liked about the park," the top response was fisheries (Littlejohn 1998).

Due to the substantial fishery, angling occurs year-round. In 1998 and 1999 Kabetogama Lake received 39.1% and 42.4% of the fishing pressure in the park; Rainy Lake, 37.9% and 37.1%; Namakan Lake, 16.2% and 13.6%; and Sand Point Lake, 6.8% and 6.9% (Eibler 1999; Burri 2000). The location of fishing activity is often a product of various attributes, such as the depth of water, fish behavioral patterns, and specific fishing seasons. The geographic location of angling is often the determinant for where visitors select a particular site or resort accommodation within one of the park's two basins.

The park has observed greater pressures for fishing in recent years, due in part to more restrictive measures implemented in neighboring Ontario. Regulative controls in Canada, such as catch and release, greater incurred expenses, total catch limits for particular species, and limits on the total number of licenses, have helped funnel fishing activities to U.S. waters. Because of these dynamics, angling pressure could increase throughout the region, as long as fisheries continue productive levels.

### OVERNIGHT AND DAY USE

Overnight camping along lakeshore areas is one of the more popular activities at Voyageurs. Unlike many national parks, access to camping sites requires navigating the waters to secure developed sites along the shoreline. The park does not have recreational vehicle (RV) or "drive-in" camping on the mainland.

As of 2001, the park has 215 developed sites for tenters, houseboaters, and day visitors. Site amenities may include tent pads, mooring posts or docks, bear-proof storage lockers/bear poles, privies, and fire rings. Of the developed sites, 94 have been created using resource protection criteria laid out in the park's 1988 *Lakecountry and Backcountry Site Management Plan*, 86 were present before the park was established, and 34 were created by the park before the plan was in effect. Types of facilities are listed in table 15.

TABLE 15: OVERNIGHT AND DAY USE FACILITIES

| | | |
|---|---|---|
| Small Campsite | 112 | 9 persons each, 1 handicap accessible site |
| Large Campsite | 12 | 18 persons each |
| Small Campgrounds (tents) | 2 (5 sites each) | 5 groups of nine persons (45 persons) |
| Houseboat Sites | 78 | 2 houseboats per site |
| Day Use Site | 11 | No limit |

Source: Voyageurs National Park 1999.

Overnight and day use activities are mostly distributed throughout the park along shoreline areas of the four major lakes. Given natural physical properties of the park landscape, protected areas for natural elements, islands and channels, and developed camping areas prior to the establishment of the park, a greater concentration of developed sites is located in the Namakan basin (see table 16).

TABLE 16: LOCATION OF DEVELOPED SITES

| | | | |
|---|---|---|---|
| Small Campsite | 77 | 18 | 17 |
| Large Campsite | 8 | 4 | - |
| Houseboat Site | 46 | 32 | - |
| Day Use Site | 7 | 3 | 1 |
| Small Campground | 2 | 0 | 0 |
| Total | 140 | 57 | 18 |
| Percentage Distribution | 65% | 26% | 9% |

Source: Voyageurs National Park 1999.

Although most visitors prefer to use developed sites, camping or mooring is permitted almost anywhere in the park as long as it is not within 200 yards of a developed site, is not on private or leased land, is at least ¼ mile from park developed zones, and is not within a designated sensitive resource area. Currently the park has an estimated 785 undeveloped sites, 400 of which are existing or vacated cabin sites (NPS 1988). However, not all of the 785 undeveloped sites can be easily identified and used by visitors.

For visitors who desire more of a wilderness experience, backcountry camping is permitted at 17 developed sites within the interior of the Kabetogama Peninsula or at large throughout the rest of the park, with unlimited numbers of overnight users and no party size limit.

Backcountry tent sites, which comprise 9% of total overnight camping facilities, are generally located along trails or near interior lake areas. Many of these sites are traditional or historic camping areas developed by the U.S. Forest Service or Boise Cascade prior to the establishment of the park. Participation in backcountry camping is approximately 7% of total park use. Of survey respondents, 88% rated the quality of developed campsites as "good or very good," and 85% indicated that campsites are "very or extremely important" (Littlejohn 1998).

Day use, which commonly consists of shore lunches, is permitted at 11 designated sites, at developed tent and houseboat sites until 4 P.M., and at undeveloped sites. Developed day use areas are equipped with picnic tables, vault toilets, and docking infrastructure, and they can accommodate two groups of nine people each. Although day use is permitted at developed overnight sites, conflicts arise when

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overnight users do not know the status of occupancy of an overnight site. Additionally, this permitted use also facilitates conflicts when overnight guests may ask or intrude on a day use group. Day use sites are especially limited.

Large-group camping is permitted at the two (tent) campgrounds designed for five groups of nine people each, for a total of 45 persons. Park staff have observed in recent years that these facilities are being used by groups that exceed the capacity for which the facilities were designed. Although the need for more small campgrounds may increase, few areas in the park meet the physical criteria required for large group facilities. Currently, there are no developed facilities that provide adequate accommodations for these groups. Sometimes large groups become noisy, which disturbs the camping experience for others.

As reported by a park survey, 36% participated in summer camping, and 32% reported using a developed tent or houseboat site during their visit. Although the current system allows for unrestricted choice of a site and the flexibility to relocate during inclement weather, park staff has noted frustration among some visitors who desire to find an unoccupied developed site. Of park survey respondents who camped overnight, about one-third reported difficulty in locating an unoccupied site. Many of those who had difficulty locating an overnight site felt that a reservation system would have been helpful (Littlejohn 1998). Many users reiterated this concern during the public scoping process.

The 1988 *Lakecountry and Backcountry Site Management Plan* allows for about 400 tent, houseboat, and day use sites if fully implemented. At present, the park develops approximately 8–10 new sites per year. After more thorough evaluation prior to construction, some sites may not meet the criteria identified in the plan, thereby resulting in less than 400 sites. The existing number and locations of developed day use, tent, and houseboat sites does not always meet current demand, and many users feel more developed sites are needed. However, overnight use is allowed at undeveloped sites.

Currently, open fires are permitted at both day and overnight sites as long as they are contained within metal fire rings or established rock rings. While the use of liquid fuel campstoves is recommended, park users may collect "dead and down" wood for fires at developed and undeveloped sites.

### HIKING

Unlike many national parks that offer land-based recreational activities, opportunities to experience Voyageurs by road or trail are limited. About 30 miles of hiking trails of varying length and difficulty exist at Voyageurs.

Two-thirds of the trail system is comprised of the 17-mile Cruiser Lake trail, which provides access to several interior locations within the eastern portion of the Kabetogama Peninsula. However, most mainland trails do not form a network that provides linkages to destination areas. Trails for nonmotorized uses in the park are inadequate, especially on the mainland, where visitors without access to boats have few options to experience park resources.

A park survey reported that 42% of visitors participated in hiking during their visit to Voyageurs. Hiking was among the top five important reasons for visiting the park. Of visitor groups responding, about 80% rated the importance of trails as "very or extremely important" and that the quality of trails was "good or very good" (Littlejohn 1998).

### VIEWING SCENERY AND WILDLIFE

The quality of the visitor experience at Voyageurs is, to a large part, due to the scenic quality of the natural environment. Visitors often mention that the expansive undeveloped shorelines, the lack of visual intrusions from development, and the diversity of the landscape are perhaps the park's most attractive qualities. The ability to camp along much of the shoreline without seeing neighboring visitors lends to the "wilderness experience," as well. According to one park survey, "viewing scenic beauty" ranked as one of the most significant reasons for visiting Voyageurs (Littlejohn 1998).

In addition to natural scenic qualities, the diversity of the park landscape and open water affords substantial opportunities for wildlife observation. Voyageurs maintains significant concentrations of river otter, is one of three national parks that supports indigenous packs of gray wolf, and estimates populations of 15–25 pairs of nesting bald eagles, 100–150 black bears, and 60–100 moose. Additionally, colonial nesting waterbirds, deer, loon, beaver, and snowshoe hare are commonly seen throughout the park during much of the year.

Although active forms of recreation, such as boating and fishing, likely play the most important role in drawing visitors to the park, "wildlife viewing" comprises the fourth most important reason for visiting (Littlejohn 1998). While the majority of this activity occurs during summer, over one-third of winter snowmobile users also list viewing wildlife as an activity that enhances the park experience (Lime and Lewis 1996). The interest and interpretive focus on wildlife is further supported by nature trail brochures, visitor center exhibits, and ranger-led programs.

### BOATS ON INTERIOR LAKES USE (BOIL)

The boats on interior lakes (BOIL) program affords opportunities for visitors to paddle and explore backcountry lakes without the need to portage nonmotorized watercraft. Rowboats and canoes are provided free of charge on Locator, Quill, Cruiser, Little Shoepack, Shoepack, Ek, Brown, and Peary Lakes. Locator Lake has five boats available for day use only and two boats for overnight use. Boats are available on a first-come, first-served basis, but reservations can be made one week in advance. Visitors must fill out agreement forms and secure a key at one of the visitor centers. Of total park recreational use, less than 2,000 persons (<1%) participate in this program.

The Chain of Lakes is the primary focus of the BOIL program. Visitors access the Locator Lake boat storage area by way of the Locator Lake trail (from the south) or the Cranberry Creek portage (from the north). Boats may be reserved for up to three days and must be returned to the boat storage area.

Of visitors familiar with the program, 88% rated the program as "good or very good quality" (Littlejohn 1998). However, since the inception of the BOIL program, misuse of equipment and careless behavior has caused frustration for park maintenance and some visitors. In addition, concerns that boat use in interior areas may adversely impact some wildlife during critical seasons of the year have been raised. The program incurs costs for the park to manage and repair or replace damaged boats.

### PADDLING

The lake-dominated landscape of Voyageurs National Park offers a variety of different canoeing and kayaking experiences on the interconnected major lake systems, the interior Chain of Lakes, and slow-moving backwaters of bays and streams. Paddling affords visitors the option to explore shallower, sheltered waters by canoe for a more secluded type of wilderness experience, or to cross open waters by kayak. In particular, kayaks are able to navigate the waters of the park's large lakes, and Voyageurs has been highly rated by several kayaking and adventure travel magazines.

Although some visitors traverse park waters exclusively by canoe or kayak, paddling activities also complement motorboating, houseboating, and camping. Of visitors responding to one survey, 20% participated in canoeing or kayaking activities (Littlejohn 1998).

The expansiveness of the major lakes and the lack of special facilities or use areas for paddlers, such as designated route campsites, no-wake water areas, or separate nonmotorized launch areas, may hinder greater participation in paddling activities. While paddling is not considered a common recreational pursuit or an important reason for visiting Voyageurs overall (Littlejohn 1998), the greatest increase in recreational activity witnessed by park personnel has been paddling, both canoeing and kayaking. At times, groups of 18–20 canoeists have been observed in the Namakan basin. Given the party size limits (9 persons), difficulty of obtaining permits during the peak season, and costs incurred at the neighboring Boundary Water Canoe Area Wilderness and Quetico Provincial Park, it is likely that paddling activity, especially large groups, will continue to grow in the park.

## INTEGRATED WINTER USE

### SNOWMOBILING

Snowmobiling has traditionally been a popular winter recreational activity in northern Minnesota and has been the fastest growing recreational use in the park during the previous 10 years. However, levels of participation vary significantly from year to year, as a result of snow and ice conditions. Currently, there are about 110 miles of groomed snowmobile trails maintained by regional snowmobile clubs and park staff. The majority of trails traverse the frozen lake surfaces, although approximately a dozen overland portages (¼ to 2 miles long) provide linkages and safe routes. Depending on snow conditions, most trails are groomed once a week, while heavy use trails are groomed twice a week. In addition to groomed paths, the 11.2-mile Chain of Lakes trail, a nongroomed one-way route that traverses the interior of Kabetogama Peninsula, provides a rugged backcountry experience along five interior lake areas. Recently ranked within the "top 10" nongroomed snowmobile trails in the country, the Chain of Lakes trail receives modest use.

The greatest levels of overland use generally occur on routes connecting Black Bay (Rainy Lake) with Kabetogama Lake. During winter of 1989–90, the park began marking snowmobile routes on the major lake surfaces. Since that time, overland snowmobile operation has been restricted to safety portages and the snowmobile route through the Chain of Lakes. Park staff have observed that the marked and tested routes serve as an attraction for many snowmobile users.

Although efforts to ensure safe travel by snowmobile are a priority for the park, some nonmotorized winter users perceive hazardous conflicts in areas shared with snowmobiles. Additionally, adverse impacts from noise generated by increasing levels of snowmobile use have been cited as an issue of concern.

### ICE ROAD USE

The park maintains a 7-mile ice road that provides access between the Rainy Lake visitor center and Cranberry Bay. The road affords entry to ice fishing "communities" on Rainy Lake, as well as the cross-country ski trail on the west end of Kabetogama Peninsula. Ice road use fluctuates annually as a result of winter weather conditions and ice thickness.

### ICE FISHING

Ice fishing primarily occurs near the gateway community areas that provide access to the frozen lake surfaces. The majority of activity takes place near the Rainy Lake ice road. Due to the quality of ice and the length of season, the level of participation fluctuates annually.

### CROSS-COUNTRY SKIING, SNOWSHOEING, WINTER CAMPING

Nonmotorized winter uses include snowshoeing, cross-country skiing, ice fishing, and winter camping. The park maintains 5 miles of tracked snowshoe trails and 20 miles of groomed cross-country ski trails. The most extensive system of nonmotorized winter trails is near the Rainy Lake visitor center and includes trails maintained by the National Park Service and the Minnesota Department of Natural Resources. Access to the Kabetogama Peninsula trail requires crossing the frozen lake surface by using the ice road. Limited ski trails on the mainland provide inadequate cross-country skiing opportunities, and some visitors feel that winter use on the large lakes is dominated by snowmobiles. At present, these recreational activities comprise a small percentage of total recreational use.

While winter camping represents a minor recreational use, park staff have observed greater interest in this activity more recently. At present, no developed facilities, such as a hut-to-hut winter camping system, exists in the park.

# INTERPRETATION, VISITOR SERVICES, AND EDUCATION

## INTERPRETIVE FOCUS

Voyageurs National Park is a landscape dominated by water. It is a land on the edge — the border with Canada, the transition zone between boreal forest and northern hardwood forest, the edge created where the water meets the land, and the edge of civilization for humans throughout time. The waterway landscape has determined the lifestyles, and the lifeways have altered the landscape. The subjects covered in the park's themes and interpretive activities focus on the rich human occupations from prehistoric fishing to modern sportfishing, and from the extractive uses of the fur trade, gold mining, market hunting, and logging to the restoration of the ecosystem through fire, natural lake levels, and wildlife protection. Voyageurs has a multi-faceted story to tell that has one basic theme — the waterways and their importance to life.

The 1981 *Interpretive Prospectus* focused on name recognition and promotion of the national park, offering programs and visitor contact that utilized the facilities at hand, and building an operation based on "traditional" Park Service visitor centers. The overriding interpretive theme was the park environments and man's relationship to them, a theme common to other national park system areas and not focused on Voyageurs' mission, purpose, or significance. Interpretation was not based on knowledge of the visitor experience and visitor use patterns. Over the first 25 years the interpretation program was slow to react to changes in critical resource management issues and changing visitor use patterns.

Recent interpretive planning and visitor use surveys have defined visitor uses, patterns, and needs. A higher level of staffing and funding are needed to provide pre-visit information, onsite visitor orientation, curriculum based education, community outreach, interpretive programming that focuses on the mission and significance of the park, and quality interpretive media beyond the visitor centers. The focus of the interpretive program recognizes that Voyageurs is an active water-based park that visitors experience and learn to appreciate through active participation and connection with the water-based resources. It is also becoming a park with a strong summer and winter season, and two shoulder seasons that have experienced increased visitation.

### INTERPRETIVE PROGRAMS

For many visitors, especially those without boats, the way to experience the lakecountry is to take a naturalist-guided concessioner tour boat trip of the park, a recreational canoe trip, or a "voyageur north canoe" trip. Currently, the park has one contract to provide tour boat service on a regular schedule during the main visitor season. The park provides naturalist guides for all tour boat programs and uses tour boats for environmental education programs. The park also offers 30 hours of guided naturalist programs and 12 hours of costumed interpreter guided voyageur north canoe trips per week during the summer. These programs afford visitors an opportunity to view and learn about the park's scenic environment and wildlife, and to visit cultural sites.

From mid June to Labor Day the park offers concessioner-operated tour boat programs in the Rainy and Namakan Districts. The Rainy District tour boat docks at the Rainy Lake visitor center. The Namakan District tour boat docks at the Kabetogama Lake visitor center. At present no tours depart from Crane Lake or Ash River. Concession boat tours are the major means of providing interpretive programs for visitors.

Visitor education and park interpretation comprise an important focus of the park, and over 40 programs per week are presented during the summer season. Evening programs, children's programs, and canoe trips (with 6 to 20 people per group) comprise about 75% of all programs offered and generally last 1–2 hours. Participation in winter programs, such as wolf howling, has increased recently, although it represents a minor portion of total participation.

Currently, the park uses the Minnesota State Forest's Woodenfrog picnic area and CCC structure as a staging area for three types of ranger programs (13 programs/week). However, the dispersed nature of camping throughout the park and the locations of resorts make it inconvenient for visitors to reach a central location. A higher level of participation from overnight guests that stay at the Woodenfrog Campground (60 campsites) occurs because campers are concentrated in one area. Seventeen percent of the people who participated in a park survey and were repeat visitors reported having attended a ranger program (Littlejohn 1998).

### INTERPRETIVE PUBLICATIONS AND PROJECTS

The park publishes a variety of informational brochures for visitors. However, there is a backlog of publications that need to be developed as funding and staffing allow. Some interpretive trails do not have brochures. Funding that was budgeted for visitor facilities and historic structures did not include interpretive exhibits. Consequently, the park operates two visitor centers that have limited exhibit space, fabricates exhibits in-house, and uses outdated interpretive equipment and media. Funding for interpretive exhibits has not kept pace with the restoration of historic properties, so buildings stand empty and unavailable to visitors.

### EDUCATION AND OUTREACH PROGRAMS

The park offers to a few grade levels water-based environmental education programs that focus on the park's natural and cultural history. Outreach programs are more limited and conducted by request.

### VISITOR SAFETY AND CONTACT

The park provides information about resource protection, visitor safety, and a quality visitor experience through pre-visit contacts at visitor centers and orientation bulletin boards.

## CONCESSIONS AND VISITOR SERVICES

In addition to the two concession-operated tour boats, a concessioner also operates the Kettle Falls Hotel and provides associated services, and another concessioner provides boat and motor rentals on Mukooda Lake.

### KETTLE FALLS HOTEL AND SURROUNDING AREA

The National Park Service purchased the Kettle Falls Hotel in 1977 and established a concession contract for its operation. The concessioner operates the hotel (with 12 rental rooms, restaurant, and bar service), three rental lodge units (maximum of 40 guests), and staff housing (maximum of 16 people). The concessioner also provides fishing boats and canoes, motor rental, two fueling stations, a camp store, a fishing guide service, and a mechanical portage service. The hotel, restaurant, and lodges are open seasonally from May 15 to mid-October. Kettle Falls Hotel was opened for winter visitors for the first time during the winter of 1992–93 through 1999–2000. Interpretive media needs to be developed for the historic district, the dam, the historic dam tender's cabin, the hotel and its furnishings. The lack of interpretive media at these locations has resulted in complaints.

### MUKOODA LAKE BOAT RENTALS

The park maintains three limited concession permits for boat rentals on Mukooda Lake; all permit holders are from the Crane Lake community. One concessioner rents two boats and two motors, whereas the other two rent one boat and one motor. Every four years, the concessioner that rents two boats and two motors rotates between the three permit holders. In general, boats and motors are rented during a 16–18 week period, mid-May through mid-September.

# PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

## PARK ORGANIZATION AND PROGRAM AREAS

The park staff is organized into six divisions: superintendent's office, administration, maintenance, resources management, resource protection, and visitor education and planning. The park has two administrative districts, the Rainy District and the Namakan District. The park's main administrative office is in International Falls, where the majority of permanent staff (68%) are located. All other employees work out of the visitor centers at Rainy Lake, Ash River, and Kabetogama Lake, plus nearby historic buildings at Kabetogama Lake, the Ash River operations area (near the Ash River visitor center), and the Crane Lake ranger station. No employees live or work permanently at Kettle Falls.

Over the years the number of staff at Voyageurs National Park, both full-time and seasonal, has decreased because of funding constraints. Voyageurs has never been fully staffed in the area of law enforcement and visitor protection. Ranger staffing for law enforcement and visitor protection started decreasing in 1993. At the high point, the park had six permanent full-time equivalent (FTE) employees and three to five seasonal employees, not counting the dispatch operation. The park currently has 5.6 permanent FTE employees and no seasonals. There is no ranger patrol in the backcountry.

Funding and staffing for interpretation have decreased over the past 15 years, while visitor use, facilities to be staffed and interpreted, and programs to be implemented have all increased. Voyageurs has never been fully staffed in the area of education and interpretation. Currently, the park has four permanent FTE employees and six seasonal employees in interpretation. Consequently, the presence of NPS employees in high traffic areas has decreased. During the summer season volunteers assist in visitor center operations and interpretive programs.

Due to staffing limitations, maintenance activities, such as site cleaning and construction, have been reduced. The park does not have a comprehensive preventive maintenance program that would help ensure the sustainability of park facilities.

Resource management needs have increased, while staffing levels have remained the same. Without additional staff, only standard monitoring and issues requiring immediate response can be completed.

## NPS FACILITIES AND EQUIPMENT

The park has equipment and materials necessary to complete most projects and programming. However, in some cases equipment is outdated and inadequate, such as the park's radio system, which may impede park operations, requests for assistance, and employee safety.

### Headquarters

The National Park Service leases a building just south of International Falls to serve as the park headquarters. Current office and storage space at the headquarters building just meet the needs of the park staff stationed here. If additional staff are hired to implement proposed actions, office space would become inadequate.

180

### Rainy District

The Rainy District rangers, naturalists, maintenance workers, and seasonal interpretive staff are stationed at the Rainy Lake visitor center. Current office and storage space meet the needs of the park staff stationed here. If additional full-time staff were stationed at this location, office space could become inadequate.

### Namakan District

The Namakan District rangers, naturalists, and seasonal interpretive staff are stationed at the Kabetogama Lake visitor center. Office and storage space are inadequate, hindering day-to-day operations. This area lacks cold weather storage for vehicles and equipment.

Maintenance staff in this district work out of three different locations: the visitor center, the Kabetogama Ranger Station Historic District near the visitor center, and the Ash River operations area. The lack of centralized maintenance operations makes some projects difficult because equipment and facilities are located 13 miles apart. In addition, the Ash River operations area lacks a meeting area, office space, and adequate storage facilities. Utilities in this area also frequently fail.

There are no maintenance facilities at the Ash River visitor center because the Ash River operations area is nearby. The visitor center staff use a large closet for storage as well as office space. The Namakan District does not have an overall plan for operations and building use.

### Kettle Falls

The presence of park staff at Kettle Falls is minimal because no permanent office space or workspace is available. Visitors expect to see NPS personnel at Kettle Falls. This expectation is not being met.

### Crane Lake

At Crane Lake the park leases a house and garage that serves as a ranger station and required-occupancy residence. The ranger's office is small and doubles as a visitor information area. There is one NPS dock and a ranger boat at Crane Lake. No other equipment, housing, storage, or workspace is located at Crane Lake.

## PARK HOUSING

Due to the large number of seasonal park employees, researchers, and volunteers, the park maintains seasonal housing areas at Whispering Pines, the Sand Point ranger station, and Crane Lake, as well as near the Kabetogama Lake and the Ash River visitor centers. All together 28 beds are available for seasonal housing. There is no employee housing near the Rainy Lake visitor center or at Kettle Falls. In general, park housing does not meet present needs because of the seasonal demand, lack of year-round buildings, and location of housing from some workstations.

## PARTNERSHIPS AND COOPERATION

Voyageurs National Park participates in a variety of partnerships and cooperative management efforts. Partnerships focus on visitor safety and protection, visitor facilities (mainly trail maintenance), visitor services, tourism potential, and resource protection. Park staff work with a variety of agencies, organizations, and groups to accomplish projects at Voyageurs.

191

# REGIONAL SOCIAL AND ECONOMIC ENVIRONMENT

## ECONOMY

The economic region surrounding Voyageurs National Park is Minnesota's Arrowhead, a wedge-shaped area extending along the north shore of Lake Superior and bordered on the north by Ontario, Canada. The Arrowhead Region, as defined by most Minnesota state agencies, includes seven counties — Koochiching, Itasca, Aitkin, Carlton, St. Louis, Lake, and Cook Counties.

The economic region affected by Voyageurs National Park is considerably smaller. For the purpose of this analysis, that region is defined as northern Koochiching County and the northwestern portion of St. Louis County, or the area within approximately 60 miles of the park.

The economies of both the larger and smaller regions, and the lifestyles of their residents, are both strongly linked to the area's outstanding natural resource base. Wood products and tourism are the dominant economic sectors. The Arrowhead region accounts for almost half of the state's timberland — 48% in 1990. Koochiching County contains about 20% of the Arrowhead's total timberland; St. Louis County about 35%.

The largest employment sectors in Koochiching County in 1997 were manufacturing (27%), services (25%), retail trade (20%), and government (18%). In St. Louis County, the service sector was dominant (30%), mining was significant (6%), and manufacturing (7%) employed many fewer workers than in Koochiching County.

In general, the manufacturing sector (dominated by wood products) shrank steadily in the Arrowhead region from the 1970s through the 1990s, while the service sector increased. In Koochiching County manufacturing employment fell from 2,500 in 1979 to 1,600 in 1997; however, the wood products industry continues to dominate in terms of total wages.

Unemployment in northeastern Minnesota has declined in the 1990s, although it still exceeded state levels. The unemployment rate in St. Louis County was 4.9%; Koochiching County, 7.1%; and the Arrowhead region, 6.2%. The unemployment rate for all of Minnesota is 3.3%. According to the Minnesota Planning Agency, "the economy in northeastern Minnesota is projected to improve due to greater economic diversity and increased demand for recreation, but some parts of the region are still projected to lose population as a result of the older age structure and out-migration patterns."

## DEMOGRAPHIC CHARACTERISTICS

The population of Koochiching County has declined 21% since 1960. The rate of decline between 1990 and 2000 was 12%. The population of St. Louis County declined by 13% between 1960 and 2000. The population stabilized and even rebounded slightly in the 1990s, with a gain of 1.2% from 1990 to 2000. The majority of the St. Louis County population is in the Duluth metropolitan area.

**TABLE 17: POPULATION CHANGE, 1960–2000**

| | | | | | |
|---|---|---|---|---|---|
| Koochiching County | 18,190 | 17,130 | 17,570 | 16,300 | 14,355 |
| St. Louis County | 231,590 | 220,690 | 222,230 | 198,210 | 200,528 |

Source: U.S. Bureau of the Census 2001; Minnesota Planning Agency 1999.

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The largest minority population is Native American, constituting 2.8% of Koochiching County's population in 1990; other minority populations comprised less than 1% each of the county populations.

The area's population is expected to continue to age. During the next 30 years the number of people over 65 is expected to increase, while the number of people between 25 and 54 is expected to decline. As a result of these trends and out-migration, population is expected to decline in the Arrowhead region by 5% overall, with a decline of 15% in Koochiching County (see table 18).

**TABLE 18: POPULATION FORECASTS, 1995–2025**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Koochiching Co. | 15,911 | 15,620 | 15,320 | 15,000 | 14,640 | 14,200 | 13,580 | -15% |
| St. Louis Co. | 198,879 | 199,400 | 197,520 | 194,170 | 190,500 | 187,050 | 183,910 | -8% |
| Arrowhead | 315,800 | 317,810 | 316,070 | 312,500 | 308,600 | 304,320 | 299,380 | -5% |

Source: Minnesota Planning Agency 1998.

Household income levels in the Arrowhead region declined during the 1980s, but per capita income increased slightly in Koochiching County. The percentage of persons in poverty declined slightly in the 1990s (see table 19).

**TABLE 19: INCOME AND POVERTY LEVELS, KOOCHICHING AND ST. LOUIS COUNTIES**

| | | | | |
|---|---|---|---|---|
| Koochiching County | | | | |
| Median Household Income | $ 27,354 | $ 23,411 | $ 31,097 | 32.8 |
| Per Capita Income | $ 10,354 | $ 11,732 | – | |
| Persons below Poverty (%) | 12.2 | 12.9 | 11.1 | |
| Personal Income | – | $ 14,263 | $ 16,568 | 16.2 |
| St. Louis County | | | | |
| Median Household Income | $ 29,487 | $ 24,093 | $ 33,064 | 37.2 |
| Per Capita Income | $ 12,064 | $ 11,833 | – | |
| Persons below Poverty (%) | 9.2 | 14.2 | 12.0 | |
| Personal Income | – | $ 16,252 | $ 20,536 | 26.4 |

SOURCE: U. S. Census; Minnesota Planning Agency.

## ECONOMIC EFFECTS OF THE PARK

Tourism is an important and growing part of the economy of northeastern Minnesota. The region has decreased its historical reliance on mining, and to some extent on forestry, but tourism has developed as a sustainable industry based on natural resources, albeit one that pays generally lower wages than mining, forestry, or manufacturing.

Although it is difficult to accurately isolate and quantify the economic impact of Voyageurs National Park, it is estimated that the total annual economic impact of the park is between $27 million and $40 million. This includes primary and secondary spending, although some of it occurs outside the Voyageurs gateway communities.

Approximately $3,359,000 was paid in wages by tourism-related businesses in three of the four gateway communities in 1997. This estimate was based on data provided by the Minnesota Department of

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TABLE 28: ECONOMIC IMPACT OF TOURISM BY REGION

| | | |
|---|---|---|
| Voyageurs National Park Region | 27 | 0.3 |
| Northeastern Minnesota* | 823 | 11 |
| State of Minnesota | 7,636 | 100 |

SOURCE: Minnesota Office of Tourism 1989.

* Northeastern Minnesota includes Aitkin, Carlton, Cook, Isanti, Itasca, Kanabec, Koochiching, Lake, Pine, and St. Louis Counties.

Economic Security and includes businesses logically dependent on the park: water transportation, eating and drinking establishments, miscellaneous retail, hotels and other lodging places, and amusement and recreation services. The data include businesses within each of the ZIP code areas of three of the four gateway communities (56669, 55725, 55771). The data do not include International Falls, which is much more influenced by non-Park economic forces than are the other three gateway communities.

## SERVICES AND FACILITIES NEAR THE PARK

Visitor services have been established outside Voyageurs National Park in four U.S. gateway communities that are located adjacent to the park boundary plus a small part of neighboring Canada: International Falls and Rainy Lake, Kabetogama Lake, Ash River, Crane Lake, and Ontario bordering northern Rainy Lake. These separate and distinct resort communities offer an alternative to outdoor camping, with a range of overnight accommodations such as modern lodges and cabins to more rustic and inexpensive accommodations. In addition to lodging, the resorts offer food services, mainland camping, and recreational equipment rentals, as well as outfitter, guide, and water taxi services. Three of the park's gateway communities — Kabetogama, Ash River, and Crane Lake — are comprised primarily of small-scale family resorts that are dependent on tourism. The communities are important not only because they provide services for guests, but because they are also portals to the park.

International Falls is an incorporated municipality providing sewer, water, police, fire, and other services typical of a small city. It is economically oriented toward the local papermaking and lumber processing industry and much less to the park than are the Kabetogama, Ash River, and Crane Lake communities. Visitor services include motels, restaurants, gasoline stations, sporting goods stores, information centers, and other attractions that cater more to business travelers than to multi-day visitors to Voyageurs National Park. The Rainy Lake resort community, located just a few miles east of International Falls, includes resorts, houseboat rentals, and other visitor services catering to vacation groups that use the park.

The community of Kabetogama, located along County Roads 122 and 123 along the southwestern shore of Kabetogama Lake, is the most fully developed of the resort areas. The community maintains the greatest number of small-scale resort accommodations and recreational [illegible] (approximately 50% of the total). The community is also distinct from other resort areas in [illegible] about 50% of total private outdoor camping facilities are found at this location.

The Ash River community, near the southern shore of Sullivan Bay and the end of County Road 129, is the most compact of the four gateway communities. Ash River is strategically situated between Kabetogama and Namakan Lakes and provides a staging area for numerous boaters (who camp in the park) and houseboat renters during summer months. The community also lies at the juncture of three regional snowmobile trails. Winter uses are common in the area.

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The community of Crane Lake, comprising over 16 resorts, serves as a gateway to Voyageurs National Park, the Boundary Waters Canoe Area Wilderness, and Quetico Provincial Park. Crane Lake serves as a summer hub for canoes, houseboats, motorboats, and fixed-wing aircraft (U.S. Customs).

An unincorporated portion of Ontario bordering Rainy Lake contains two resorts. There is comparatively little resort development in this area because of its isolated location.

### RESORTS

In all, over 60 private resorts near Voyageurs National Park provide over 400 lodging units or cabins. About 50% of the resorts abut park waters, and another 40% provide boating access to waterways that link to Voyageurs.

The resorts in the four park communities (not including downtown International Falls, which is described below under "Hotels and Motels") have a wide diversity of characteristics, level of quality, and rates, although nearly all are well-kept, modern, and family-oriented. The resorts tend to be small, in the range of 6 to 24 cabins or rooms. New and luxurious accommodations are few, as most resorts are older and less elaborate. Most of the resort cabins are equipped with full kitchens, allowing guests to prepare meals during their stays. Options may include an American plan dining alternative, which includes breakfast and supper in the cost of the rental package, or guests may dine at local restaurants. Local cuisine features fresh fish (especially walleye), wild rice, and seasonal berries.

**TABLE 21: RESORTS NEAR THE PARK**

| | | | | | |
|---|---|---|---|---|---|
| Total resorts<br>(Year-round resorts) | 11<br>(7) | 29<br>(10) | 4<br>(4) | 16<br>(7) | 60<br>(28) |
| Total rooms/units | 101 | 285 | 51 | 119 | 556 |
| Percentage of total rooms | 18% | 49% | 10% | 22% | - |
| Average no. rooms per resort | 9.2 | 9.1 | 12.75 | 7.4 | 8.9 |
| Size of resorts (number of rooms) | 1–25 | 2–23 | 10–17 | 1–28 | – |
| Resorts with water/beach access<br>(Percentage) | 7<br>(64%) | 27<br>(94%) | 4<br>(100%) | 14<br>(88%) | 52<br>87% |

SOURCE: Voyageurs National Park 2001.

NOTE: Kettle Falls Hotel is not included in this inventory since it is within park boundaries.

About a third of the resorts provide restaurant and bar service. Most include a swimming beach or pool, some have facilities for recreational vehicles, most have a recreation room and/or playground, and a few (a growing number) are open all year. All have boat docks. Most accommodations are strongly oriented toward multiday or week-long rentals, while only two or three regularly have one-night openings available. There is one bed-and-breakfast inn on Rainy Lake. Although no new resorts have been built in the last 10 years, improvements are steadily occurring.

Resorts tend to cater to two types of visitors, fishermen and families. However, seasonal opportunities, such as hunting and fishing, attract a specific type of visitor. Although fishing opportunities are the most pursued recreational venue, many resorts, especially those that cater to families, try to provide their guest with diverse activities. The most pursued activities of resort visitors include fishing, motorboating, enjoying beach environments, wildlife viewing, and hiking. Various resorts that entice visitors to stay for several days offer promotional packages. The average number of nights spent inside and immediately outside the park in 1995/1996 was 6.5; the median number was 3.0 (Vlaming 1996).

Private visitor services include boat rentals, and marine /outfitting/water taxi services. Although these services provide options for private resort guests who may wish to rent equipment or use the expertise of a guide, many services are used by campers and park visitors who are not staying at a resort. Table 22 lists available services in each gateway community:

TABLE 22: SERVICES OFFERED BY RESORTS

| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|---|---|
| Resorts offering equipment rentals<br>• Motorized boats (fishing boats)<br>• Nonmotorized boats (canoes) | 7<br>3 | 28<br>15 | 5<br>4 | 12<br>7 | 52<br>29 |
| Outfitters | 0 | 3 | 1 | 2 | 6 |
| Fishing guides | 8 | 14 | 2 | 11 | 35 |
| Winter guides | 3 | 5 | 2 | 3 | 13 |
| Camping/canoeing guides | 1 | 5 | 1 | 3 | 10 |
| Water taxi/boat charter | 5 | 12 | 1 | 3 | 21 |
| Marine repair/towing | 2 | 5 | 0 | 4 | 11 |
| Ice-fishing guide and/or shelters | 1 | 1 | 1 | 2 | 5 |
| Air charter | 0 | 0 | 0 | 1 | 1 |

SOURCE: Voyageurs National Park 2001.

### HOTELS AND MOTELS

Ten of the area's 12 motels are located in International Falls; two are in the Crane Lake community. Approximately 44% of private lodging units in the four gateway communities include hotel and motel accommodations. Those in International Falls provide standard motel accommodations and terms, and they are much more oriented toward travelers or businesspersons than to a family or group seeking a recreational experience in the park. Four are national chain franchises. The park is featured very little in the marketing or accommodations of the International Falls group. They also offer none of the ancillary services or facilities of the park-community resorts.

### COMMERCIAL AIRCRAFT SERVICES

Currently, one commercial airplane pilot holds an incidental business permit to fly passengers into Shoepack Lake.

## COMMUNITY DEVELOPMENT

### LAND DEVELOPMENT

The primary limitations to land development near Voyageurs National Park are loose soils, wetlands, and high bedrock. A constraint to creating new resorts is the shortage of lakefront land on the market and the relatively short construction and visitor use season. The housing vacancy rate is very low because there is little turnover and little speculative new construction, adding to tightness in the available labor pool.

**Ownership.** The pattern of landownership near the park is a constraint to the private acquisition of land for building or expanding tourism-related businesses. A substantial amount of land on the perimeter of the park is owned either by the state, the county, or the federal government or by lumbering companies.

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**Market Conditions.** The demand for land development has been very low near the park. Consequently, prices are relatively low, especially for land that does not abut a lake. There has been very little new commercial or residential development in the past five years; building permits are requested annually for only a few expansions and improvements. Most of the development activity has been second or vacation homes, all of which are on large parcels adjacent to the water. There is very little construction of housing on a speculative basis (starting construction without a contract with a buyer).

**Sewage System Limitations.** A major constraint to land development near Voyageurs National Park is the poor soils for septic systems. Siting and building an acceptable septic system and a backup drainfield are difficult because many sites have soils that are either too sandy and rocky for proper bacterial action, they have bedrock that is too close to the surface, and/or they include wetlands.

**Land Available for Resort or Recreational Service Development.** Limited land that is adjacent to a lake and environmentally suited for commercial development is on the market.

- At Kabetogama Lake there are no undeveloped lakeshore parcels. The only possible development sites are away from the water. However, there is a lot of "redevelopment" of lakeshore parcels that is changing the nature of resorts and the mix of residences and resorts.
- The Crane Lake area is intensively developed, and there is no available lake frontage. The lake association is studying the feasibility of installing a shared sewage system, which would allow existing resorts to expend by an estimated 15% to 25%.
- The Ash River community, which is tightly developed, has better soils for septic systems than does the Crane Lake area, but new development is still a challenge.
- In the Rainy Lake resort community, zoning would allow one more resort.
- In International Falls zoning and natural conditons are not constraints to business development.

Even land not adjacent to a lakeshore is difficult to develop since the rate of turnover is very low.

### HOUSING

There is very little new housing construction in the gateway communities. Koochiching County gained 1,141 housing units in the 1980s. However, most of these were not occupied year-round, indicating that they were probably vacation homes. Occupied units declined slightly, while rental units increased slightly. Housing values declined in the 1980s. In St. Louis County, the number of occupied housing units also declined in the 1980s. Renter-occupied units also declined in number. Housing values dropped by 25%, and rental costs declined as well.

Very few houses or residential land parcels come onto the local market. Practically all residential land development near the park has been second or vacation homes, all of which are on large parcels adjacent to the water. There is very little construction of housing on a speculative basis. Decent quality housing priced at levels affordable to many of the service industry employees is extremely scarce. Alternative places to live include communities such as International Falls, Ray, Orr, and Little Fork. It is not uncommon for people to commute relatively long distances to work.

The tight housing market also somewhat limits the size and composition of the labor pool, which reportedly forces up the pay scale for help in the resort and recreation industries. (Earlier school starting dates mandated by the state and the exodus of older students to colleges makes employees especially hard to find in the late summer and fall.)

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## Chapter Four

# Environmental Consequences

## 4

Methodologies for Analyzing Impacts
Summary of Regulations and Policies
Impacts of Alternative 1
Impacts of the Modified Proposed Action
Impacts of Alternative 2
Impacts of Alternative 3

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150

# METHODOLOGIES FOR ANALYZING IMPACTS

If not otherwise stated, standard definitions of negligible, minor, moderate, and major or severe were used. They are:

> *Negligible* — the impact is at the lower levels of detection, or less than 1% change over the life of the plan.
>
> *Minor* — the impact is slight, but detectable, or a 1–10% change over the life of the plan.
>
> *Moderate* — the impact is readily apparent and has the potential to become major, or a 11–15% change over the life of the plan.
>
> *Major* — the impact is severe, or greater than a 15% change over the life of the plan.
>
> *Impairment* — the impact would harm the entire integrity of the resource or value, particularly a resource or value whose conservation is key to the cultural or natural integrity of the park, or a resource or value needed to fulfill a specific purpose identified in the park's enabling legislation. Impairment is specific to actions taken by the National Park Service and is influenced by a park's enabling legislation.

The term "localized" refers to the site, the individual wildlife, the wildlife group, the actual place where vegetation is removed, etc. When comparing changes to existing conditions, impacts are often only detectable on a localized basis. For instance, if continuing existing conditions would result in the restoration of about 100 acres of native pine forest over the life of the plan, and the modified proposed action would restore 150 acres, this is a 50% change or a major localized benefit compared to no action. However, the return of 100 or 150 acres compared to the 50,000 acres that have been lost in a regime of fire suppression and logging in the 20th century (existing conditions) is a negligible (less than 1%) benefit.

## NATURAL RESOURCES

### AIR QUALITY

Calculations of carbon monoxide and hydrocarbon emissions from mobile sources inside the park were calculated based on hours of use.

For snowmobiles, a recent study in Yellowstone National Park (NPS 2000a) using emissions factors from the Southwest Research Institute showed that 63,000 snowmobiles each used an average of four hours emitted 765 tons of hydrocarbons and 2,100 tons of carbon monoxide (CO). An average of just over 29,000 snowmobiles have been used in Voyageurs National Park from 1995 to 1998; assuming each was ridden an average of four hours, emissions should be very close to half those in Yellowstone, or 380 tons of hydrocarbons and 1,050 tons of CO. However, calculations in the Yellowstone study are based on conditions specific to Yellowstone, including concentrated use in certain areas, particular fuel types, high elevation, etc. and it is unlikely that assuming half this use in Voyageurs gives more than a "ballpark" estimate of emissions.

For motorboats use was based on a total of 154,000 craft-hours for Rainy Lake, 44,700 for Sand Point, 100,000 for Namakan, and 185,000 for Kabetogama Lake per season, for a total of 484,000 hours or four times the number of hours as snowmobiles (using Eibler 1999 and unpublished MDNR information for the 1999 season). Boats are not operated continuously for all the hours they are on the lakes; they are assumed to be operating about 50% of the time on average in this analysis.

For land-based vehicles figures for the number of hours they are driven in the park were not available. Cars produce on average 10-70 times less carbon monoxide and 45-250 times less hydrocarbons than two-stroke engines (NPS 2000a). Therefore, even at similar levels of operation, they likely only produce a fraction of the emissions from either snowmobiles or motorboats.

Visibility information comes from five years (1988–93) of NPS IMPROVE (Interagency Monitoring of Protected Visual Environments) monitoring data inside the park (near the Rainy Lake visitor center), as well as in neighboring Isle Royale National Park and Boundary Waters Canoe Area Wilderness. The IMPROVE monitoring, designed to characterize the quantities and types of particles that constitute ambient aerosols, was discontinued in 1993. However, ozone monitoring continued through the NPS Gaseous Air Pollutant Monitoring Network at a site near Ash River. Mercury was also monitored in the park until 1996. Some criteria pollutants are monitored in Fort Frances by the Ontario Ministry of the Environment. Depositions of wet sulfate and nitrate in the vicinity of the park are monitored through the national atmospheric deposition program. Data from each of these monitoring stations and the scientific literature as cited were used to summarize current status of each in the park.

The degree of change in air quality degradation attributable to snowmobiles, motorboats, and cars over existing conditions was assumed to equal a rate of growth of visitors to the park, or about ½% per year over the 20-year life of the plan. Because technology to control vehicle emissions will likely improve over this time period, emissions may be substantially less than this. In the absence of quantitative data, best professional judgment prevailed.

### SOILS

Information from the literature, and in particular from the preliminary campsite monitoring report for the park (Larsen et al. 1999), was used to determine the degree of impact from overnight use. The same level of degradation in undeveloped sites was assumed as that found at developed sites. Criteria used to interpret the extent of impact were those used in a nearby park unit in Wisconsin (Apostle Islands National Lakeshore) as limits of acceptable change (Smith 1997). When any of these criteria were exceeded, the impact was considered major or severe to that site. Total area eroded at sites, or that would be graded for other development, was compared to the area of parkwide soils to gauge the significance of the impact in a different (parkwide) context. The standard definitions outlined above (i.e., negligible is less than a 1% change) were used. The comparative differences between the action alternatives and no action were determined using this same scale (i.e., if 80–120 fewer sites than the 400 anticipated under no action were developed, this would result in 20–30% less soil erosion, a major localized benefit). In the absence of quantitative data, best professional judgment prevailed.

### VEGETATION

The same approach to analyzing impacts of alternatives to vegetation was used as that described above for soils. The park's preliminary 1997–98 campsite monitoring report (Larsen et al. 1999) was used to determine how many sites exceeded criteria used by a nearby park unit as indicators that the sites were over-damaged and should be closed (i.e., there was a major or severe impact). Standard definitions were used wherever quantitative information was available in other cases. In the absence of quantitative data, best professional judgment prevailed.

## WATER QUALITY

Averages of creel surveys for Rainy Lake were used to determine the number of craft-hours that houseboats use this lake. Rainy Lake accounts for 42 commercial houseboats, and the average number of days (dividing craft-hours by number of commercial houseboats) shows that each boat is used about an average of 49 days. This is not a precise number, but an estimate, since creel surveys do not differentiate between private and commercial boats.

Currently, 92 commercial houseboats serve the Rainy and Namakan basins. Creel surveys show houseboats on Rainy Lake have spent an average of nearly 50,000 craft-hours total each year since 1996 (1996–1999 Rainy Lake creel surveys, NPS unpublished information). A typical U.S. citizen uses 40–80 gallons (151–303 liters) per day of water at home, including 8–12 gallons (30–45 liters) per day to bathe or shower and 10 gallons (38 liters) to wash dishes and hands (Linsley and Franzini 1979). According to houseboat company owners, it is unlikely all participants would shower each day, or that most would take regular length showers (since they would have many boat mates who also wished to shower). The actual use is unknown. For analysis, it was assumed each person would use about 10 gallons per day. If an average of six to eight people are assumed to be aboard each houseboat (some carry fewer, some carry up to 12), and the average use per day for bathing and washing is about 10 gallons (38 liters), each boat would produce an average of 60–80 gallons (230 to 307 liters) of graywater per day. In 1999 creel surveys indicated about 3,600 houseboat craft-days in the Namakan basin (for both commercial and private users), and in 1999 and 2000, about 3800 craft-days on Rainy Lake (NPS unpublished data). This translates to 216,000 to 288,000 gallons (830,000 to 1.1 million liters) of graywater released into the Namakan basin and 228,000 to 304,000 gallons (877,000 to 1.17 million liters) in Rainy Lake. These are gross estimates only.

No actual data are available on the number of motorized boats using the park's lakes. However, creel surveys conducted by the Minnesota Department of Natural Resources and the National Park Service count the number and type of boats and hours they spend on east and west Rainy Lake each year. The most recent creel survey of angler hours on Kabetogama and Namakan Lakes was conducted in 1999. The counts are randomly stratified with respect to time of day, and therefore they give a statistically sound estimate of the mean number of boats or anglers on the lakes during the season. The categories of fishing boats, other boats, parked boats, and houseboats were combined to estimate the number of boats on the park's large lakes.

A number of assumptions were made in calculating the volume of oil-gas mixture emitted into the lakes each year. Unpublished information from the Minnesota Department of Natural Resources on watercraft use of the park's four large lakes in 1999 was compiled to determine the number of hours boats were in use. The same number of craft-hours as given above in "Air Quality" were used. The literature (California EPA, 1999; Martin 1999; NPS 1998a) indicated two-stroke engines emit 25–46% of fuel into exhaust, and use fuel at an average rate of 10 gallons per hour (Martin 1999) or 10% of the horsepower rating (in gallons per hour) at full throttle (park staff, pers. comm. Dec. 1999). In the absence of data, half the motorized boats on the lake were assumed to use 100 HP engines, and half 25 HP engines. They were assumed to be at full throttle 25% and 80% of the time respectively. Oil-gas emissions at full throttle were assumed to average 25% and were assumed to be zero when boats were at idle or at RPMs slower than full throttle. The Environmental Protection Agency has mandated a 75% reduction in emissions from new outboard motors by model year 2006. It is unknown how many of the boats on park lakes have already adopted four-stroke or fuel-injection technology that complies with the new EPA standards. Therefore, a reasonable high and low end were calculated. The high end assumed 5% of all motorboats had adopted EPA compliant technology in 2000, and that an additional 5% would adopt it each year thereafter. The low end assumed 50% of all houseboats and 25% of all other motorized boats had adopted the technology in 2000, and an additional 5% per year would continue to convert each year thereafter. Creel surveys from 1999 were used to determine the number of watercraft on average. The number of craft hours was assumed to increase at ½% per year, the same as the predicted increase in visitor numbers.

Concentrations above standards imposed for the protection of aquatic wildlife were assumed to be "readily detectable" and therefore moderate adverse impacts. Those above drinking water standards were assumed to be potentially major impacts. Those within standards but detectable were defined as minor, and those below the limits of detection, negligible. In the absence of quantitative data, best professional judgment prevailed.

### FISHERIES

The status of fish stock, particularly the predominant species in the large lake fisheries, are primarily determined from data collected jointly by NPS, USGS (Biological Resources Division), and MDNR personnel. Since 1983 standardized sampling protocols have been used to monitor the abundance of key species and biological characteristics, particularly growth patterns. Climatic, hydrological, and limnological characteristics that may influence fish populations are also monitored. Creel surveys and information in the literature were used to assess the impact of the fishery on the fish populations. Because they receive less use, interior lakes are surveyed less frequently (on average every 15–20 years). More intensive studies may be conducted to address specific management questions.

Relative impacts were determined using the literature and expertise from USGS Biological Resources Division staff. If quantitative information was available, the percentage change as defined above was used as an indicator. In the absence of quantitative data, best professional judgment prevailed.

### WILDLIFE

Information from the literature was used to assess probable impacts to wildlife. In addition, specific localized impacts were estimated using changes that have occurred along the lakeshore from overnight and day use characterized in the park's preliminary campsite monitoring report (Larsen et al. 1999).

The following were used in interpreting the level of impact to wildlife (from the NPS "Report to Congress on Effects of Aircraft Overflights on the National Park System," 1994b):

> *Negligible* — No species of concern is present; no impacts or impacts with only temporary effects are expected.
>
> *Minor* — Nonbreeding animals of concern are present, but only in low numbers. Habitat is not critical for survival; other habitat is available nearby. Occasional flight responses by wildlife are expected, but without interference with feeding, reproduction, or other activities necessary for survival.
>
> *Moderate* — Breeding animals of concern are present; animals are present during particularly vulnerable life-stages, such as migration or winter; mortality or interference with activities necessary for survival expected on an occasional basis, but not expected to threaten the continued existence of the species in the park.
>
> *Major* — Breeding animals are present in relatively high numbers, and/or wildlife present during particularly vulnerable life stages. Habitat targeted by overflights or other actions has a history of use by wildlife during critical periods and is somewhat limited. Mortality or other effects are expected on a regular basis and could threaten continued survival of the species in the park.

When these criteria were not applicable, standard definitions for degree of change relative to existing conditions were used. If quantitative information was available, the percentage change as defined above was used as an indicator. Without quantitative data, best professional judgment prevailed.

### SPECIES OF SPECIAL CONCERN

The park has monitored bald eagles' breeding success in and immediately adjacent to the park every year since 1973, and it has sponsored several research efforts to assess the impacts of human disturbance and environmental toxins. It has also periodically monitored wolf numbers and tracked territories and natural and human-caused deaths. This information, supplemented by information in the literature, was used to estimate probable impacts. Standard definitions for degree of change relative to existing conditions were used. If quantitative information was available, percentage change as defined above was used as an indicator. In the absence of quantitative data, best professional judgment prevailed.

## CULTURAL RESOURCES

Impacts on cultural resources were developed based on existing conditions, current regulations, and likely development trends. Based on data about known archeological sites, it is assumed that areas along the park's numerous lakes are high sensitivity areas for such resources. Currently, the lakeshore areas on both the major and smaller inland lakes are popular destinations for visitor use in both developed and undeveloped areas. Thus, these lakeshore areas would be more susceptible to impacts resulting from development-related construction activities and increased visitor use. The inventory of archeological resources in the park is largely incomplete. For purposes of assessing impacts, all unrecorded resources are considered potentially eligible for listing on the National Register of Historic Places.

The park's inventory of standing structures is largely complete (except for those in private ownership), and the evaluation of structures to determine their eligibility for listing on the National Register of Historic Places will be completed this year. One cultural landscape has been documented in the park, however, many other potential landscapes have been identified. A parkwide effort to inventory and evaluate these landscapes began in 2000. For purposes of assessing potential impacts to these properties, all currently unevaluated structures and landscapes are assumed to be potentially eligible for listing on the national register. Given that the alternatives in this document serve only as general guidelines for future management and are not project-specific, any proposed federal undertaking resulting from decisions made pursuant to the approved plan would require a full inventory and evaluation of any historic properties within the area of potential effect for a given project (pursuant to section 106 of the National Historic Preservation Act of 1966, as amended).

Under section 106 only historic resources that are eligible for or are listed on the National Register of Historic Places are considered for impacts. An impact, or effect, to a property occurs if a proposed action would alter in any way the characteristics that qualify it for inclusion on the register. If the modified proposed action would diminish the integrity of any of these characteristics, it is considered to be an adverse effect.

Specifically, for purposes of this document, the level of impacts to cultural resources was determined using the following criteria:

> *Negligible* — No potentially eligible or listed properties present; there would be no direct or indirect impacts.

*Minor* — Potentially eligible or listed properties are present; there would be no direct impacts, or impacts with only temporary effects.

*Moderate* — Potentially eligible or listed properties are present; impacts would be indirect or direct in the case of structures where activity would be limited to rehabilitation conducted in a manner that would preserve the historical and architectural value of the property.

*Major* — Potentially eligible or listed properties are present. Direct impacts would include physical destruction, damage, or alteration of all or part of a property; the isolation of a property from its setting or the alteration of the character of a property's setting when that character contributes to its eligibility, including removal from its historic location; the introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting; the neglect of a property resulting in its deterioration or destruction (36 CFR 800.5).

In the absence of quantitative data concerning the full extent of actions under a proposed alternative, best professional judgment prevailed.

## VISITOR EXPERIENCE, INTERPRETATION, AND SERVICES

Impacts on the visitor experience and services were determined based on the best available information regarding visitor use, services, and experience. The alternatives only establish broad management guidelines, and their general nature requires that the impact assessment also be general. The degree of impact was quantified when sufficient data were available. However, often only qualitative descriptions of impacts were available.

Summer use was examined based on information gathered from the visitor study completed by the Cooperative Park Studies Unit at the University of Idaho (Littlejohn 1998). The study researched visitor demographics, use patterns, visitor services and facilities, and visitor opinions related to the park and its facilities and services from July 25 to August 3, 1997. A 1996 recreation survey by Jonathan Vlaming was also used. This study focused on the identification and analysis of current recreational activities, desired recreational opportunities, and information sources used by visitors to the Voyageurs National Park region to plan their activities.

Winter visitor information was gathered from studies completed by the Cooperative Park Studies Unit, University of Minnesota, College of Natural Resources. The studies were completed during the winters of 1994–95 and 1995–96. The winter findings were based on a two-year research project to gather baseline information about snowmobilers and their winter use patterns in the park. Results of the research effort were documented in two separate technical reports (Lime and Lewis 1995, 1996) and in a research summary (Lime and Lewis 1996). The studies compared the data from two years of study and provided an in-depth look at first-time snowmobilers to the park.

This visitor use information was supplemented by data gathered during this planning process, which included numerous meetings with service providers, park users, and a wide range of professionals from the park staff.

The effectiveness of the interpretive opportunities and their value for visitors, plus visitor safety, was assessed based on the experience of park interpretive and protection rangers and on their knowledge of existing interpretive programs and activities.

196

Impacts were evaluated at a level that would permit decisions to be made about the management prescriptions that form the basis for each alternative. The severity of the impact was viewed comparatively between the alternatives, using alternative 1 (the no-action alternative) as a baseline.

*Negligible* — The impact is of insignificant concern, especially parkwide.

*Minor* — The impact is slight but detectable.

*Moderate* — The impact is readily apparent and has the potential to become major.

*Major* — The impact is severe.

Impacts for concessions were analyzed based on generalizations of the information contained in the annual reports submitted by concessioners.

## SOCIAL AND ECONOMIC ENVIRONMENT

The qualitative evaluation identifies the direction, either positive or negative, of impacts based on generally accepted economic principles. The lack of specificity as to the scope, timing, and extent of specific actions proposed in the alternatives does allow a quantitative analysis of the economic impacts. For the purposes of this qualitative analysis, the following general assumptions were followed.

The qualitative evaluation of economic impacts identifies the direction, either positive or negative, of impacts based on generally accepted economic principles. The lack of specificity as to the scope, timing, and extent of specific actions proposed in the alternatives does not allow a quantitative analysis of the economic impacts. For the purposes of this qualitative analysis, it was assumed that the following factors would affect the economy:

- a change in the number and size of the existing facilities and options used by more than 10% of the users
- attracting new user groups or eliminating existing user groups
- a change in the length of stay in the area
- changing or diversifying the destination image of the park, thus broadening or narrowing the appeal to potential visitors
- effects on industries with high revenues
- effects on highly capitalized industries
- a change in park budgets
- a change in the public/private provision of park services
- construction projects

From a social impact perspective, it was assumed that

- An effect on the local communities' economies would also impact their social well-being.
- Controversial actions would affect the social well-being of a community.
- A change in park/community interdependencies would impact social well-being of the community.

Providing safety or health and hygiene improvements, or improving resources that are not part of nor contribute to the park's recreation mission, would not affect the economy.

# SUMMARY OF STATUTES, REGULATIONS, AND POLICIES

## GENERAL REGULATIONS

### NPS ORGANIC ACT

The 1916 NPS Organic Act (16 USC 1 et seq. as amended) directs parks to "conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations." These general powers were broadened by PL 95-250 in 1978 (16 USC 1a-1, 79a-q), in which Congress gave further direction that parks should not be managed in any way that might reduce values or purposes for which they have been established.

In the NPS *Management Policies*, both requirements to conserve park resources and values, and to protect them from impairment are further explained. Conservation is considered to be the "primary goal" of the National Park Service, and it is to be considered predominant if there is a conflict between conserving resources and values and providing for enjoyment of them (NPS 2001, sec. 1.4.3). To carry out this mandate, park managers are instructed to always seek ways to avoid or minimize adverse impacts on resources. However, they are specifically prohibited from allowing actions that might impair them. Impairment involves the integrity of the resource or value, and it is more likely if the resource or value at stake is one for which the park unit was created (sec. 1.4.5).

### NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act of 1969 (NEPA; P.L. 91-190; 42 USC 4321 et seq.) sets forth federal policy to preserve important historic, cultural, and natural aspects of our national heritage and accomplishes this by assisting federal managers in making sound decisions based on an objective understanding of the potential environmental consequences of proposed management alternatives. This act applies to any federal project or other project requiring federal funding or licensing. This act requires federal agencies to use a systematic, interdisciplinary approach integrating natural and social sciences to identify and objectively evaluate all reasonable alternatives to a proposed action.

### NATIONAL PARKS AND RECREATION ACT

The National Parks and Recreation Act of 1978 (P.L. 95-625; 16 USC 1a–7(b)) requires that general management plans be developed for each unit in the national park system. General management plans are to include, among other things, "(1) measures for the preservation of the area's resources, (2) indications of types and general intensities of development (including visitor circulation and transportation patterns, systems and modes) associated with public enjoyment and use of the area, including general locations, timing of implementation, and anticipated costs; (3) identification of and implementation commitments for visitor carrying capacities for all areas of the unit; and (4) indications of potential modifications to the external boundaries of the unit, and the reasons therefor."

### WILDERNESS ACT

NPS policies dictate that the park may take no action that would diminish the wilderness suitability of an area possessing wilderness characteristics until the legislative process of wilderness designation is completed (*Management Policies 2001*, 6.3.1). This means temporary, non-conforming conditions that preclude wilderness designation should be removed, and certain activities (such as snowmobiling) allowed in other areas of the park would be prohibited in areas considered potential wilderness, or actually proposed or recommended for wilderness in the park's 1992 *Wilderness Recommendation*.

## NATURAL RESOURCES

### AIR QUALITY

A 1977 amendment to the Clean Air Act designated all national parks over 6,000 acres as mandatory class 1 areas, worthy of the greatest degree of air quality protection under the act. Congress declared as a national goal "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class 1 Federal areas." NPS federal land managers are expected to know the condition of their air quality and to "err on the side of resource protection." Park managers are invited to comment on any proposed major modification or new major source that could impact the park. Generally, the National Park Service reviews proposed major modifications and new major sources within 100 kilometers of a park. Occasionally, the National Park Service reviews minor sources as well, but states are not required to inform the Park Service of such sources.

In addition, the Environmental Protection Agency has set air quality standards for six principal "criteria" pollutants, including carbon monoxide, ozone, and two types of particulates (those smaller than 10 microns and those smaller than 2.5 microns). It also regulates the precursors of acid rain (sulfates and nitrates) and mercury from some sources (municipal waste combustors, medical waste incinerators), and it monitors mercury emissions from others (notably coal-fired power plants).

### SOILS

Little policy with regard to soils exists. However, in accordance with the 1988 *Lakecountry and Backcountry Site Management Plan*, no developed campsites are to be located in areas with relatively steep slopes or easily eroded soils. The most durable campsites would be located on exposed granite, but not on schist, as shallow soils on schist sites are quickly removed. The most suitable houseboat and day use sites would be those with sand beaches and no possibility of bank erosion (NPS 1988b, p. III–4).

### VEGETATION

Generally, NPS *Management Policies* state "the National Park Service will maintain as parts of the natural ecosystems of parks all native plants and animals" (2000e, 4.4.1). Any planting by the park in natural zones must be of native species. These zones (which include all proposed wilderness) are managed for fundamental ecological processes and naturally evolving park ecosystems, including natural abundance, diversity, and genetic and ecological integrity of plants and animals (NPS 2000e, 4.1).

In 1998 the National Park Service instructed park managers to design fire management programs around resource management objectives in the park, but to place safety for firefighters and the public as a top priority (NPS 1998b). The park's *Wildland Fire Management Plan* was done in 1988, and this new direction is consistent with the park's existing plan, although the park plan is to be updated.

Wetlands are protected by section 404 of the Clean Water Act (which requires permission from the U.S. Army Corps of Engineers to fill more than an incidental acreage of wetland), Executive Order 11990, and a "no net loss of wetlands" goal set by the Clinton administration in 1993. The National

Park Service specifically avoids impacts to wetlands wherever possible. If actions will affect wetlands, a statement of findings is prepared, including plans to compensate for impacts that could not be avoided.

The *Lakecountry and Backcountry Site Management Plan* prohibits the development of campsites on islands smaller than 2 acres in size, specifically to prevent stripping of vegetation for firewood. It also prohibits site development where plant species or plant communities considered rare, of special concern, or in danger of local or regional extinction are located (NPS 1988b, III–2).

### WATER QUALITY/WATER RESOURCES

Minnesota has designated waters in the park as "outstanding resource value waters." This means no one can cause or allow a new or expanded discharge of any sewage, industrial waste, or other waste into the park's lakes or streams, or any of the streams that feed into the park (Weeks and Andrascik 1998). The Minnesota Pollution Control Agency is responsible for water quality in the state, and it administers provisions of the Clean Water Act under the supervision of the Environmental Protection Agency. The Safe Drinking Water Act (1972; 42 USC 300 (f)-(j)) requires that water in Rainy Lake used for municipal drinking water comply with all federal, state, and local primary drinking water regulations. Standards for either the protection of aquatic life or drinking water have been set by the Environmental Protection Agency for acidity and for many substances, including zinc, nickel, copper, cadmium, and dissolved oxygen.

NPS *Management Policies* indicate water in the park should be maintained in its natural conditions, free of pollutants generated by human activity (NPS 2000e, 4.6.3).

A dam at the outlet of Rainy Lake at International Falls / Fort Frances is owned and operated by Boise Cascade Corporation and Abiti Corporation for the generation of electricity. Water levels in the park's large lakes are regulated by the International Joint Commission, which was established by a treaty between the United States and Canada.

### FISHERIES

Fisheries management has its roots in the NPS Organic Act, which directs parks to "conserve the scenery and the natural and historic objects and the wild life therein to . . . leave them unimpaired for the enjoyment of future generations." These general powers were broadened by in 1978 (16 USC 1a-1, 79a-q), when Congress gave further direction that parks should not be managed in any way that might reduce values or purposes for which they have been established. In this context, fisheries management is designed to preserve or restore the natural behavior, genetic variability and diversity, and ecological integrity of fish populations (NPS 1997b). Relevant policies from the NPS *Management Policies* include that parks will maintain all native animals (including fish) by preserving or restoring "natural abundances, diversities, distributions, habitats, and behaviors of native animal populations" (NPS 2000e, 4.4.1).

Recreational fishing is a recognized part of the heritage of the park and is permitted both by NPS policies and the establishing legislation of the park. As such, all alternatives in this *Final General Management Plan / Environmental Impact Statement* would continue the practice of sportfishing. The management of the fisheries is shared by the Minnesota Department of Natural Resources, the Ontario Ministry of Natural Resources (which regulates fisheries in Ontario waters), and Voyageurs National Park.

### WILDLIFE

The NPS Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean native animal life should be protected and perpetuated as part of the park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise they are protected from harvest, harassment, or harm by human activities. The restoration of native species is a high priority (NPS 2000e, 4:1:5). As noted above under "Vegetation," management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity and ecological integrity of plants and animals (4.1).

The park can also cooperatively manage or monitor wildlife with the Minnesota Department of Natural Resources.

### SPECIES OF SPECIAL CONCERN

The national mandate of the Endangered Species Act states that fish, wildlife, and plant species are of aesthetic, ecological, educational, historical, recreational, and scientific value to the nation. The act's purpose is to conserve the ecosystems upon which such species depend, and generally to increase populations and secure sufficient habitat to allow species to recover to viable levels.

The Endangered Species Act requires the National Park Service to determine whether an action would adversely affect federally listed threatened or endangered species. Consultation with the U.S. Fish and Wildlife Service is required if this is the case to ensure the action will not jeopardize the species' continued existence or result in the destruction or adverse modification of critical habitat. The act also prohibits activities that would constitute an unauthorized "taking" of the protected species.

The National Park Service is required to control access to critical habitat for listed species, and to perpetuate the natural distribution and abundance of these species and the ecosystems upon which they depend. Policies also require consideration of all state and locally listed species in planning activities (NPS 2000e, 4.4.2.3).

## CULTURAL RESOURCES

Numerous legislative acts, regulations, and NPS policies provide direction for the protection, preservation, and management of cultural resources on public lands. Further, these laws and policies establish what must be considered in general management planning and how cultural resources must be managed in future undertakings resulting from the approved plan regardless of the final alternative chosen. Applicable laws and regulations include the NPS Organic Act, the Antiquities Act of 1906, the National Historic Preservation Act of 1966 (as amended in 1992), the National Environmental Policy Act of 1969, the National Parks and Recreation Act of 1978, the Archeological Resources Protection Act of 1979, the Native American Graves Protection and Repatriation Act of 1990, and the "Curation of Federally Owned and Administered Archeological Collections" (1991). Applicable agency policies relevant to cultural resources, though not discussed in this section, include chapter 5 of the NPS *Management Policies*, and the *Cultural Resource Management Guideline* (DO-28), as well as other related policy directives such as the NPS *Museum Handbook*, the NPS *Manual for Museums*, and *Interpretation and Visitor Services Guidelines* (NPS-26).

The Antiquities Act of 1906 (16 USC 432) authorized the president to establish historic landmarks and structures as monuments owned or controlled by the U.S. government and instituted a $500 fine for unauthorized collection of their artifacts.

The NPS Organic Act (16 USC 1 et seq.) established the agency to manage the parks and monuments with the purpose of conserving historic objects within them and providing for their enjoyment.

The National Historic Preservation Act of 1966 (NHPA; PL 89-665, 16 USC 470, et seq.) requires in section 106 that federal agencies with direct or indirect jurisdiction over undertakings take into account the effect of those undertakings on properties that are listed on, or eligible for listing on, the National Register of Historic Places. The section 106 process applies to all federal undertakings or projects requiring federal funds or permits. Section 110 of the act further requires federal land managers to establish programs in consultation with state historic preservation offices for the identification, evaluation, nomination, and protection of properties listed on or eligible for listing on the national register. (For information on "The Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs Pursuant to the National Historic Preservation Act," information is available on the Internet at <www2.cr.nps.gov/pad/sec110.htm>.)

The Archeological Resources Protection Act of 1979 (PL 96-95,16 USC 470aa-mm) further codifies the federal government's efforts to protect and preserve archeological resources on public lands by stiffening criminal penalties, as well as instituting civil penalties, for the unauthorized collection of artifacts. Additionally, it establishes a permit system for the excavation and removal of artifacts from public lands, including their final disposition, as well as confidentiality provisions for sensitive site location information where the release of such information may endanger resources.

The Native American Graves Protection and Repatriation Act of 1990 (PL 101-601, 25 USC 3001–13) sets forth procedures for determining the final disposition of any human remains, funerary objects, or objects of cultural patrimony that are discovered on public lands or during the course of a federal undertaking.

The "Curation of Federally Owned and Administered Archeological Collections" (36 CFR 79) establishes guidelines and procedures for the proper curation and management of archeological collections owned or administered by federal agencies.

The 1995 "Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings" (36 CFR 68) sets forth standards to be used by the National Park Service when planning, undertaking, and supervising projects involving the preservation, rehabilitation, restoration, and/or reconstruction of historic properties listed on or eligible for listing on the National Register of Historic Places.

## SOCIAL AND ECONOMIC ENVIRONMENT

### EXECUTIVE ORDER 11644: "USE OF OFF-ROAD VEHICLES ON PUBLIC LANDS"

Executive Order 11644 establishes policies and provides for procedures to ensure that the use of off-road vehicles on public lands will be controlled and directed so as "to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands." The order provides for the development of regulations to designate specific areas and trails on public lands where the use of off-road vehicles may and may not be permitted.

### EXECUTIVE ORDER 11989: "OFF-ROAD VEHICLES ON PUBLIC LANDS"

Executive Order 11989 amends Executive Order 11644 to provide that whenever the use of off-road vehicles will cause or is causing considerable adverse effects on the resources, such areas may be immediately closed to off-road vehicles until the adverse effects have been eliminated or measures have been implemented to prevent future recurrence.

### EXECUTIVE ORDER 12898: "FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW INCOME POPULATIONS"

Executive Order 12898 outlines agency responsibilities in "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The Secretary of the Interior established Department of the Interior policy under this order in an August 17, 1994, memorandum. This memorandum directs all bureau and office heads to consider the impacts of our actions and inactions on minority and low-income populations and communities, to consider the equity of the distribution of benefits and risks of those decisions, and to ensure meaningful participation by minority and low income populations in our wide range of activities where health and safety are involved.

Equity issues concerning the distribution of benefits and risks may occur in any National Environmental Policy Act impact area.

# IMPACTS OF ALTERNATIVE 1

## NATURAL RESOURCES

### AIR QUALITY

#### Analysis

This alternative would result in the development of campsites, day use sites, and trails in accordance with the 1988 *Lakecountry and Backcountry Site Management Plan.* All of these activities would have the potential to result in localized, temporary air emissions from motorized equipment (including oxides of nitrogen, sulfur, and carbon monoxide), and incidental dust from grading and moving soil.

Air quality inside the park would continue to be affected by emissions from mobile sources. Based on studies and assumptions described in the "Methodology" section above, snowmobiles in Voyageurs produce as much as 380 tons of hydrocarbons and 1,050 tons of carbon monoxide in a season. In a recent study in Yellowstone, researchers found snowmobiles were responsible for as much as 765 tons of hydrocarbon and 2,100 tons of carbon monoxide in a single season (1993), and noted this was "equivalent to several major stationary sources being located within the park" (NPS 2000a). Motorboats have the same type of engine (two-stroke) as snowmobiles; using assumptions stated in the "Methodologies for Analyzing Impacts" section, they would be on the water (using craft-hours for Kabetogama, Namakan and Rainy lakes) about four times the number of hours snowmobiles are in use. While they are stationary with engines off for some of this time, total motorboat emissions likely exceed those from snowmobiles. Cars also contribute to pollution, but less than do snowmobiles and motorized watercraft (NPS 2000a). It is unknown whether CO standards are violated in the park, as this pollutant is not monitored locally. No hydrocarbon standard exists, but hydrocarbons contribute to haze (see "Visibility" below), and the concentrations of hydrocarbon emissions are directly proportionate to the concentrations of many air toxins, including PAHs (polycyclic aromatic hydrocarbons; see "Impacts to Water Quality/Water Resources"), benzene and other carcinogens (White and Carroll 1998). Emissions from cars, snowmobiles, and motorized boats are likely to increase over the life of the plan at a rate comparable to the increase in visitors expected (½% per year, or 10% over the life of the plan), a minor impact compared to existing conditions. Motorized uses, including snowmobiles, are specifically mentioned in the park's enabling legislation. Snowmobile use of certain areas in the park included in the alternatives is authorized by a recently revised (July 1, 2000) set of regulations governing special uses in many national parks (36 CFR 7.33). Because these laws and regulations "provide explicitly" for motorized use, including snowmobiling, the activities are allowable, regardless of their impact. Despite this, an increase of ½% per year of air emissions from mobile sources inside the park would not damage the integrity of, or impair, the air quality resource.

Air quality in the park can also be affected by particulates in smoke from campfires, wildfires, or fires deliberately set by the park (prescribed burns). Planning for prescribed burns includes wind direction and burning during times of higher fuel or duff moistures to ensure fires burn for only a short time. The park mitigates impacts to visibility from smoke by notifying and educating the public on when and where prescribed burning is expected.

In addition to the release of smoke, forest fires may produce trace amounts of dioxin, although this is unknown and assumed only because soot from fires involving residential areas have been found to contain small amounts of dioxin. Using an emission factor applicable to wood stoves, which the Environmental Protection Agency has deemed highly uncertain but the best available (EPA 1991), the park's program of prescribed burning has resulted in 0.00071 g of dioxin per year for the past 12 years, an amount equivalent to the burning of about 200 cords of wood in fireplaces or residential wood furnaces.

### Cumulative Impacts

Cumulative impacts often come from sources either outside the park or from sources inside the park, where no management changes are proposed. The discussion of cumulative impacts is geared to provide readers with information on forces and impacts acting on particular resources before decisions are made on whether to impact them further.

Notable sources of air pollution from outside the park include mobile sources, paper and pulp mills in the International Falls and Fort Frances area, taconite mining and smelting south of the park, and coal-fired power plants in the northeastern Minnesota area. As stated in "Chapter 3: The Affected Environment," the park is concerned about visibility, ozone, and mercury. Because actions under alternative 1 would result in some dust and increased emissions from mobile sources, cumulative impacts of these types of pollutants (particularly to visibility, and ozone in the case of mobile sources) are also analyzed. Acid precipitation is not a concern at this time, for reasons explained in "The Affected Environment."

**Visibility.** Visual range in the park averages between 30 and 42 miles (50 and 70 kilometers) and depends on season, wind speed, and other climatic conditions. Overall, this visual range is still considered "good," especially compared to regional figures of 15–25 miles or less for most of the Great Lakes Region (NPS 2000d). As noted in "The Affected Environment," visibility is adversely affected by very fine particulates, organics, nitrates, and sulfates. These aerosols and fine particulates may remain suspended in the atmosphere for days, leading to regional transport that can affect visibility over broad areas. Sources of the components of haze include cars, snowmobiles, motorboats, and local mills, as well as industrial development in the region and in the country. Visibility in Voyageurs is comparable to that in Isle Royale and Acadia National Parks, and roughly half that in Grand Canyon, Bryce, Canyonlands, and many other western parks (NPS Air Resources Division 1999g).

To some extent, the park's decreased mean visual range compared to western parks is a function of its location on the continent, as prevailing winds blow suspended pollution from west to east. However, more local sources of particulates, nitrates, and sulfates, such as from the paper and pulp industry (see Ontario Ministry of the Environment 1998), taconite mining and smelting, power plants, and mobile sources in and around the park appear to be reducing visibility in the park as well. Those sources to the south of the park appear to be most closely associated with days of poor visibility.

Data compiled from 1988 through 1993 by NPS staff indicate a reduction in mean visual range during the haziest days in winter, averaging 13% per year. Visibility data collection stopped in 1993 in the park. Mean visibility averaged 37 km on the haziest days, and decreased an average of 6 km per year. By the end of the plan, the continuation of this trend would mean a reduction in visibility of 260% over current conditions, a major adverse impact on visibility in the park. However, five years of data is not adequate to determine whether this is a statistically significant trend, and it is unlikely that such a trend would be allowed by air quality management agencies to continue to degrade at this rate.

**Ozone.** Ozone monitoring near the park since 1989 suggests an increase of about 0.5 ppb/year in the summer average daily maximum concentration of ozone (NPS 1999g). No exceedances of the one-hour U.S. standard were observed from 1994 to 1998, although the Ontario standard was violated at least once in 1993, 1994, 1995, and 1996, and very nearly exceeded in 1997 and 1998 (79 ppb and 77 ppb respectively; MPCA 1999). Ozone concentrations in the park average 68 ppb, well under the most recent EPA proposed 8-hour ozone standard of 85 ppb. If average ozone concentrations continue to increase at 0.5 ppb/year over the 20-year life of the approved plan, they would reach 78 ppb. This would be a 15% increase, a moderate impact to park air quality; however, it is unknown whether the trend will continue.

**Particulates.** The two local pulp mills produce large particulates in the form of dust, as well as smaller, inhalable particulates or those that contribute to haze (see "Visibility" discussion). Because development in the park would contribute incidental dust to the air basin, larger particulates from sources such as the pulp mill could have a specific additive, or cumulative impact. In a recent study of several air quality parameters in Fort Frances, monthly dustfall was exceeded in 8 out of 12 months in one location in 1997, 4 out of 12 in another, twice in a third and not at all in three additional monitoring locations in 1997 (Ontario Ministry of the Environment 1998). This same pattern was repeated during the first half of 1998 until a period when the plant was closed. During the closure, the dustfall standard was not exceeded. An analysis of the material making up the dustfall showed it was largely a product of sawdust ((Ontario Ministry of the Environment 1998). Although this information indicates the mills do emit dust, it is unknown whether these heavy particulates reach the park. The cumulative effect is therefore unmeasured and unknown, although the contribution attributable to actions specified in any of the alternatives is no more than negligible.

**Mercury.** Fish and wildlife in Voyageurs National Park show elevated levels of mercury, even in comparison to nearby federal lands. Airborne mercury appears to have a noticeable, and in some cases, damaging impact to wildlife (see "Chapter 3: The Affected Environment" and the wildlife discussion below). The sources of mercury are likely atmospheric and are described in chapter 3.

Pre-industrial levels of atmospheric mercury were about 25% of those today in the Upper Midwest, which averaged 7.4 μg/m$^2$/yr from 1990 to 1995, and have increased an average of 0.60 μg/m$^2$/yr over this same period (Glass and Sorensen 1999). Although this trend was reflected near the park in both International Falls and Ely, these two monitoring locations had the lowest levels of mercury of all six stations monitored, indicating a decreasing trend from south to north and highest to lowest precipitation in the region studied. In this same period, International Falls averaged 5.9 μg/m$^2$/yr, with an average increase of 0.47 μg/m$^2$/yr. If this increase continues, atmospheric mercury over the park would average 15.3 μg/m$^2$/yr at the end of the plan. This would be a 150% increase and a major adverse impact on park air quality.

### Conclusion

Emissions from mobile sources are expected to increase at the same rate as visitor use increased, or about 10% over the life of the plan. This would be a minor adverse impact to air quality and would not constitute an impairment of the park air quality resource. The impact of proposed development in this alternative on the concentration of large particulates in the park is expected to be negligible. Visibility on the mean of the haziest 20% of days in winter and atmospheric mercury are increasing at a rate that would result in major adverse impacts to air quality compared to existing conditions if the trend continued for the life of this plan, although additional data on visibility is required before the National Park Service could determine if this was a statistically significant trend. Ozone is increasing at a rate that would result in moderate adverse impacts to air quality by the end of this plan's life.

## SOILS

### Analysis

**Impacts Related to Overnight/Day Use Sites.** Currently the park has 215 developed lakecountry sites, and an estimated 785 undeveloped sites (NPS 1988b). Of the developed sites, 94 have been created using resource protection criteria laid out in the park's 1988 *Lakecountry and Backcountry Site Management Plan*, 86 were present before the park was established, and the remaining 34 were created by the park before the plan was in effect.

In assessing the impacts of this alternative, it is assumed policies in the *Lakecountry and Backcountry Site Management Plan* regarding party size limits, site restoration, and a reservation system for overnight use would remain unenforced for the 20-year life of this alternative. A free permit system for the use of overnight sites is assumed to go into effect at an unspecified date.

The types of impacts to soils and vegetation from the use of lakecountry and backcountry sites in the park, as described in chapter 3, include the loss of organic surface layers, compaction, increased runoff, and erosion of the subsurface. Trampling and uprooting of vegetation (see "Vegetation" below) eliminates root systems that would otherwise hold soils in place. This also contributes to increased erosion.

Although these types of impacts are common to some extent on all campsites, a recent preliminary study (Larsen et al. 1999) of park developed sites found damage to soils and/or vegetation to be extensive in some cases. The majority of the 175 lakecountry developed sites examined (or 67%) had no vegetation at all in the core area. While some of these sites were intentionally originally located on exposed rock, others are devoid of vegetation because of human use.

Core areas of the campsites, or areas where vegetation is completely or nearly gone, averaged 69 square meters (0.17 acre), and 14% of sites had core areas larger than 100 square meters (0.25 acre). Twelve sites (or 7%) had 10 or more social trails. Either is considered beyond the limit of acceptable change in a nearby park unit (Apostle Islands National Lakeshore) and indicative of major adverse impacts to soils. Island sites and older, inherited sites in particular had large, highly disturbed core areas.

The authors of the study suggested that this expansion of the core area indicated the use of undesignated areas for tents, exploring, etc., possibly by groups larger than that for which the site was designed. Most (89%) sites also had social trails, created at least in part to access firewood. While the study examined developed sites only, in the absence of data this analysis assumes that a similar proportion of undeveloped sites are experiencing similar damage to soils and vegetation, particularly since these sites can be found virtually anywhere in the park, including on steep slopes or areas where there are rare or unique plants or vegetative communities (such as wetlands).

A survey of backcountry sites showed similar types of impacts, although extensive damage to soils was not apparent. Moderate damage to soils was evident at 8 of 15 sites studied (5–9 social trails, or a core area of 50–99 sq m [0.12–0.24 acre]). Two had barren ground and the potential for localized erosion. Assuming this same situation is present in the park's primitive area (e.g., where campers can hike off trails and create their own overnight sites in the backcountry), allowing at-large camping with no party size limits would continue and would increase these types of impacts, possibly resulting in moderate or isolated cases of severe localized damage. Parkwide, this impact would be a negligible or minor one to soils. The 1999 study attributed this more extensive damage to soils and vegetation at park sites to four causes: (1) physical characteristics of the sites, (2) group size exceeding the capacity of the site, (3) lack of knowledge or concern regarding minimal impact camping practices, and (4) forays into surrounding woods to visit with neighbors or gather firewood (Larsen et al. 1999).

Problems associated with physical aspects of the site can include extensive erosion, particularly from steep slopes and particularly in undeveloped sites, where site criteria have not been applied. As noted above, alternative 1 would allow the creation and use of undeveloped sites to continue. Policies also call for the closure of developed sites if they are overly damaged. Although the term overly damaged is not specifically defined, it is likely the park would not close sites often or permanently. To date, five sites have been closed because of extensive resource damage, and all are scheduled for rehabilitation to acceptable park standards (installing appropriate sanitary facilities, tent pads, etc.) and future use if at all possible. Given the combination of these factors, it is likely that damage resulting from physical characteristics of the sites would increase as visitor use of the entire park increased.

The same is likely true for group size exceeding capacity of the site. Even though the establishment of a free permit system would ensure contact between NPS staff and visitors and allow the education of visitors camping at developed sites, party size limits would remain unenforced at both developed and undeveloped sites. Core areas would be expected to continue to grow, social trails would continue to be established, and resulting compaction and erosion to soils would likely increase over the life of the plan. Severe localized impacts to soils could result; however, this impact parkwide would be relatively small. Assuming an average of 0.17 acre (70 sq m) core area per site, all 1,000 lakecountry campsites in the park cover 173 acres (70 ha), while the park's land base is 134,000 acres (54,250 ha). Assuming 20% of the sites have severe damage, this is a total of 35 acres (14.2 ha), or 0.03% of the park. In this context, erosion and compaction from campsite use would have a negligible adverse impact on park soils.

**Impacts Related to Other Proposed Development.** This alternative envisions following existing, or updated and similar, development plans at the Ash River and Kabetogama visitor center complexes and at the Kettle Falls Historic District. While site-specific data collection has not taken place, the Ash River visitor center is at the top of a hill, and extensive development of the slopes would increase soil compaction and could result in erosion into Kabetogama Lake. This would be a possible major localized impact to soils at the site; however, with proper planning and mitigation, this impact could be reduced.

The park currently has 110 miles (178 km) of snowmobile trails and 39 miles (66 km) of hiking and cross-country ski trails that cover about 72 acres (29 ha), assuming a 4-foot width. Alternative 1 would add 48.6 miles (78.2 km) of additional trails, much of it on bedrock where no soil removal would be required. In some areas, already thin soils would be removed, with localized impacts. Assuming half of the trail miles would require grading, about 11 acres (4.4 ha) would be removed. This would be a 15% increase, or a moderate localized impact on soils compared to existing conditions. However, it would be a negligible impact to soils parkwide.

### Cumulative Impacts

All development actions in the park, including trails, developed sites, park facilities, and visitor centers, would require the removal or alteration of soils. Even so, 94.9% to 96.7% of the park's land base is proposed wilderness (NPS 1992) and must be managed under restrictions imposed by the Wilderness Act, including minimizing ground disturbance. Because of these restrictions, impacts to soils parkwide do not have the potential to become severe, although those in an area designated for development could experience minor to major localized impacts.

### Conclusion

Continuing the use of developed and undeveloped sites without enforcing group size limits would result in the expansion of core areas, the trampling and destruction of vegetation, and the creation of social trails. These impacts would particularly occur in poor soil locations where resource protection criteria were not applied, such as older developed sites or undeveloped sites. Impacts from compaction, vegetation loss, loss of organic surface layers, and increased erosion are locally severe in about 20% of developed and presumably undeveloped lakecountry sites. This is a major localized impact, but a minor one parkwide. Moderate adverse localized impacts to about half the park's backcountry sites would continue and could increase over a wider area or to major localized impacts in some campsites. The impact to backcountry soils parkwide would be negligible or minor. Permitting at-large camping in primitive areas could result in additional minor localized impacts to soils. Expanding visitor centers or developing trails could have moderate localized impacts, although a negligible parkwide impact. Managing areas recommended for wilderness as wilderness would help keep parkwide impacts to soils from becoming severe, although soils in nonwilderness areas could experience minor to major localized impacts from cumulative development. Adding 48.6 miles (78.2 km) of trails would affect about 11 acres (4.4 ha) of soils, a negligible impact parkwide. None of the impacts anticipated from continuing to implement alternative 1 would have more than minor impacts parkwide, and none would therefore constitute an impairment of park soil resources.

## VEGETATION

### Analysis

**Impacts Related to Fire Management Policies.** The natural resource policy specific to fire management under alternative 1 is to reestablish natural fire regimes to the greatest extent possible without reducing visitation or visitor enjoyment. Forested ecosystems, particularly red and white pine communities, would be singled out for restoration through fire and other activities. Other vegetative communities would be allowed to evolve with little management intervention. The provisions of the existing *Wildland Fire Management Plan* would continue to be followed.

As noted in "Chapter 3: The Affected Environment," large fires have been suppressed in the park throughout the 20th century. The impact of altering this natural element of change in the vegetative landscape of the park has been to cause major changes in the distribution and abundance of forest species. The upland forests of the park have shifted away from predominantly pine and spruce/fir forests common before Euro-American settlement to predominantly aspen forests today (Coffman et al. 1980). Where white and red pines were dominant in the east and southeastern portions of the park, they are now scattered, primarily in the southeastern quadrant. Aspen-associated woodlands were originally well represented only in the middle and western parts of the Kabetogama Peninsula (Coffman et al. 1980), but now are dominant on virtually all but the driest sites in the park, which remain dominated by jack pine (see table 23). Since presettlement times, the park has lost an estimated 13,000–27,000 acres of white and red pine forest, plus 20,000–27,000 acres of jack pine barrens and openings (Kurmis and Merriam 1978; USGS 1999). The park has gained an estimated 13,000–33,000 of forest in which aspen is a major component.

In addition to changing the relative abundance and distribution of some upland forest vegetation, fire suppression has resulted in the accumulation of undecomposed debris, where the "nutrient capital" or the ecosystem is stored (Heinselman 1996). Fire normally releases this capital on a regular basis and creates openings in the forest canopy. The combination brings about a high-nutrient growth of shrubs, herbs, and young trees favored by many native species of wildlife, including moose, deer, beaver, porcupine, and snowshoe hare.

### TABLE 23: ESTIMATES OF CURRENT UPLAND VEGETATION COMPARED TO PRESETTLEMENT CONDITIONS

| | [illegible] | [illegible] |
|---|---|---|
| Jack pine, oak, and rock openings | 40% | 20–25% |
| White and red pine | 30% | 10–20% |
| Aspen/birch | 20% | 30–45% |

Source: USGS 1988.

Note: The remaining vegetation (about 10% of presettlement and 10-40% of current vegetation) is aquatic, wetland, and other vegetative communities.

The park's current *Wildland Fire Management Plan* does allow lightning-caused fires to burn naturally in some cases. However, conditions under which lightning-caused fires can burn safely occur rarely. Since 1988, when the park began its fire use for resource benefits program, only three lightning-caused fires have been allowed to burn, affecting 77.1 acres (31.2 ha), or 7 acres (2.8 ha) per year. In contrast, 30 lightning-caused fires in this same time period were suppressed (Jakala, pers. comm. 1999). Despite these relatively low numbers, the park policy is to use fire wherever it is appropriate to restore forested ecosystems in the park, with the burning of 1,300 acres or more of pine and other forests, including in wetlands, anticipated this year (Andrascik, pers. comm. 2000). Over the 20-year life of the general management plan, an estimated 5%–10% of the park's forest could be treated with fire as a natural ecological process. This would be a minor benefit to all forested vegetation types listed in table 23 above.

**Impacts Related to Overnight/Day Use.** The extent of damage to vegetation resulting from the creation and use of developed tent sites in the park is described and measured in the 1999 Larsen report. As noted above, 14% of the sites examined had very large, denuded core areas of 100 square meters (1,076 square feet, or 0.25 acre) or greater, indicating severe localized damage, and one indicator used by a nearby park unit (Apostle Islands National Lakeshore) that the site should be closed (Smith 1997). Damage to vegetation in these core areas included root exposure, increased tree damage, and increased loss of vegetative cover, including seedlings and saplings. A total of 117 sites, or two-thirds of all lakecountry sites, had no vegetation in the core area.

Vegetation is also trampled and eventually uprooted or crushed and killed by the creation of social trails. The vast majority (89%) of developed lakecountry campsites studied by Larsen also have social trails. About half of the sites surveyed had one to four trails, a minor impact to vegetation in the vicinity. Another third had five or more trails, a moderate impact to local vegetation. Twelve sites (7%) had 10 or more trails. This is considered a major impact to vegetation in the local vicinity and another indicator that a site has experienced more damage than it can withstand and should be closed (Smith 1997).

These same researchers also evaluated tree damage. Most sites (107 of 175, or 61%) had five or more visitor-cut tree stumps present in or near the core area. Of these, 62 (or 35%) of all the lakecountry sites studied had 10 or more stumps, the third indicator used to determine whether damage has exceeded acceptable limits and the site should be closed. The primary cause of tree damage appeared to be firewood collection.

Combined with long-term changes to soil characteristics, such as compaction and a resulting inability to retain moisture, and the loss of the relatively thin surface organic layer through erosion, the vegetation on some of the most severely damaged sites may take hundreds or even thousands years to recover on its own to the conditions similar to undisturbed communities (Marion 1983). Increased

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turbidity and sedimentation could also cover shoreline vegetation or increase turbidity, reducing photosynthesis and aquatic plant growth.

Fifteen backcountry sites were also examined, but damage was less extensive. No sites had more than 10 social trails or a core area greater than 100 square meters. Three sites had core areas with no vegetation, and two had more than 10 stumps. Moderate damage to vegetation (5–9 social trails, or 50–99 square meters in the core area) was evident at 8 of the 15 sites studied.

Damage to vegetation is also caused by campfires at overnight sites, particularly in undeveloped areas. Of human-caused fires in the park, 98% occur at undesignated campsites or day use sites in most years (Jakala, pers. comm. 1999). To date all have been small, less than 5 acres (2 ha), and have normally occurred in conifer forests. In the last 10 years 60 human-caused fires have burned 65 acres (26.3 ha). These fires could have been much larger, but a well-established communications system in the park of cabin owners, use-and-occupancy owners, resort owners, and fixed-wing aircraft pilots has helped keep response time short.

As noted in the discussion of impacts to soils, the Larsen study attributed excessive damage to resources at park sites to four causes: (1) physical characteristics of the sites, (2) group size exceeding the capacity of a site, (3) lack of knowledge or concern about impacts that camping practices can have, and (4) social trails to visit neighboring campsites or to gather wood. Alternative 1 would continue to allow overnight visitors to camp in groups larger than a site was intended to accommodate, to gather dead and downed firewood, and to use or create undesignated sites. Visitors might also continue to cut trees for firewood, despite NPS regulations prohibiting it. Houseboats would be allowed to moor at large and to occupy designated or undesignated sites. Given these policies and the ongoing damage to vegetation, it is likely that 67% of the 1,000 developed and undeveloped sites in the park would contain no vegetation in the core area. At least 35% (as measured by 10 or more tree stumps), and as many as 55% (as measured by 10 or more tree stumps, 10 or more social trails, or 100 square meters or larger core area, and assuming these impacts are additive) of the sites would continue to experience enough damage to vegetation that they should be closed for restoration, based on criteria from other similar areas. This is a locally severe impact to soils; however, since the total area occupied by campsites is relatively small (55% of 1,000 sites at 70 square meters per site totals 95 acres [38 ha], or 0.07% of the park's land area), the parkwide impact to vegetation would be negligible. Since the integrity of the vegetation resource would remain intact, no impairment to this park resource from overnight use would occur.

Alternative 1 would also allow fires in all overnight or day use sites. Assuming a quick response by park staff in case a fire got out of control, impacts to vegetation from continuing this practice would be minor. However, if an out-of-control fire was not dealt with immediately, the acreage burned could be significantly more extensive. Although vegetation could benefit from these fires, visitor use and safety might be compromised.

Damage to aquatic vegetation from the use of undeveloped sites by houseboaters or tent campers is also possible. While developed mooring sites have been selected to avoid dense stands of aquatic vegetation and any sensitive species, at-large mooring by houseboats would leave the decision on where to place the boat at the discretion of the individual. These individuals might not be aware of the importance of aquatic vegetation in stabilizing banks and bottom sediments, or in providing forage and habitat for many invertebrates, birds, and mammals. However, park staff indicate that houseboaters prefer sandy shores, and that mooring at large would not have more than moderate localized and negligible parkwide impacts to shoreline vegetation.

While at-large tent camping would also be allowed, motorized boats would likely avoid areas with emergent or floating vegetation so as to not tangle their propellers, fishing gear, or oars (Rees and Tivy 1977). Impacts of recreational boating on aquatic plants in interior lakes (primarily from canoes) could be locally minor to moderate, depending on the number of boaters and whether certain areas received repeated use. Parkwide, however, the impacts would be negligible.

The practice of allowing at-large primitive camping would continue existing impacts and create additional moderate localized impacts on vegetation. If a free permit were required, these impacts could be reduced through education. Parkwide impacts to vegetation from backcountry camping would continue to be negligible.

**Impacts Related to Other Proposed Development.** As noted above in the discussion of soils, removing soils and vegetation to complete plans for development at visitor centers and at Kettle Falls, and to complete trails designated in the *Final Environmental Impact Statement for a Wilderness Recommendation* would result in minor, localized vegetative losses.

**Impacts Related to Recreational Use.** Recreational boating (motorboats, houseboats, kayaks, and canoes) has the potential to impact aquatic vegetation through modification of the environment (turbidity or scouring) or through direct contact with plants. Boats can also act as a means of transporting some exotic wetland or aquatic species, such as Eurasian watermilfoil.

Although propellers increase turbidity and may limit available light, research is inconclusive on whether this affects plant growth. However, most have found no correlation in depths greater than 10 feet (Vermaat and deBruyne 1993; Mumma et al. 1996; Asplund 1996; Asplund and Cook 1997). Turbidity increases are in part due to algal growth resulting from increased mixing and resuspension of the nutrient phosphorus by propeller action. Vermaat and deBruyne (1993) found that low light caused by high turbidity and increased periphyton growth limited submerged plants to waters less than 3 feet (1 m) deep. Although this effect is negligible in depths greater than 10 feet (3 m), it may be detectable, and therefore a minor impact, in shallower water (Asplund 1996). Waves created by boats impact aquatic vegetation by eroding banks, resuspending sediments in shallow waters, uprooting plants, or eroding plant roots (Liddle and Scorgie 1980). The impact of wave erosion on banks, resuspending sediments, or uprooting aquatic plants may be minor to moderate on a parkwide basis because motorized use is so widespread, but no data are available to assess this.

Frequent boat use in an area can also create channels in the vegetation and erode the bottom by removing fine sediments and exposing coarser materials. These channels may persist for several years (Zieman 1976). Aquatic vegetation is greatly reduced or absent in shallow areas where boats are common, especially when propellers were within a foot of the bottom (Ogilvie 1981). Lagler found that the prolonged use of an outboard motor in 30 inches (75 cm) of water removed all plants from a path 5 feet (1.5 m) wide. Silt had been washed to the sides, leaving a center path of sand and gravel (Lagler et al. 1950). No data on the extent of this problem in the park have been gathered, and the impact is unknown. However, most of the shoreline of the park's large lakes is relatively devoid of emergent littoral vegetation, particularly on the sandy or rocky shores preferentially selected for campsites or day use areas. Therefore, the impact is not expected to be more than negligible and localized.

Boating activities regardless of vessel type (motor, houseboat, or canoe) can result in physical damage to plants. Research has shown that physical damage to plants by boat propellers or hulls has caused declines in aquatic vegetation (Murphy and Eaton 1983; Mumma et al. 1996; Asplund and Cook 1997). Propellers can slice plant shoots or uproot whole plants, which can result in a reduction in plant biomass in areas of high recreational usage (Mumma et al. 1996). Motorized and nonmotorized boats damage emergent vegetation through collisions (Asplund 1999). Boats that are moored where vegeta-

212

tion occurs can create gaps in the vegetation as a result of wave action moving the boat from side to side. Boat launching and beaching can have an abrasive action on beds and shores, which can eliminate extensive areas of emergent vegetation where heavy use occurs (Rees and Tivy 1977). Again, although no data are available, this could be a moderate to major localized impact, and a minor to moderate parkwide impact.

### Cumulative Impacts

The southern boreal transition forest is a unique vegetative community. In the United States it is present only in northern Minnesota, northern Wisconsin, and upper Michigan. This type of forest is experiencing the effect of global warming, residential and industrial development, and logging that has been taking place for a century or more. As described above, logging and fire suppression have resulted in large-scale species and distribution changes on 54,000 acres, or 40% of the park's land-based area. The effects of global warming related to climatic changes are unknown; however, even small changes can result in the shift of species typical of this community northward. It is possible that most of the unique transition forest of the park would be eventually replaced by grassland or northern hardwoods if the changes in temperature are on the upper end of those predicted (Pastor and Mladenoff 1991).

Managed lake levels (see "Water Resources" section) have resulted in both a loss of aquatic plant diversity and structural complexity in the park's large lakes (Wilcox and Meeker 1991, 1992). In Rainy Lake, where lake level fluctuation has decreased over pre-dam conditions, a stable macrophyte community with little diversity has developed at depths that are flooded year-round. In Namakan Reservoir, where lake level fluctuations have increased, the plant community in areas that undergo long winter drawdowns has shifted to species that can withstand pervasive physical disruptions or that can invade and mature quickly (Wilcox and Meeker 1991). Some wetland species, including wild rice, have almost completely disappeared because of lake level management (NPS 1994a). These changes are a major impact to the aquatic vegetation in the park. When the International Joint Commission 2000 water level management order is implemented (see "Water Quality and Water Resources" section), minor to major benefits to aquatic vegetation are expected to occur.

Park wetland vegetation may be affected by exotic plants, including purple loosestrife and Eurasian watermilfoil. Under existing park policies, controlling exotic species invasions may receive limited action because of funding constraints. An estimated 130 acres of the park are infested by loosestrife in an area confined to the western end of Kabetogama Lake. Vehicles, water, and animals can transport the seeds, which can be produced by the billions in a well-established population. The park's current control strategy began in 1989. Until 1997 hand pulling and cutting, along with the use of pesticides, controlled local infestations in the park and at resorts adjacent to the park. In 1998 bio-control in the form of natural predators of loosestrife (European beetles) began. Pesticide use inside the park was stopped in 1997 and adjacent to the park in 1998. Continuing this policy will likely result in the spread of loosestrife, particularly along travel corridors. The park will neither have staff to detect nor control new infestations, as funded detection efforts are limited. Some of these colonies will likely become a permanent part of the ecosystem, with severe localized impacts possible through the replacement of native plants and habitat for native wildlife.

Eurasian watermilfoil is not yet in the park but is currently found in 105 lakes in Minnesota, including Gilbert Pit in St. Louis County, less than 100 miles from the park. Any recreational boating equipment brought into the park is a potential source of introduction. The plants have a high growth rate and dominate the littoral zone of lakes. It can form dense mats on the surface of lakes, shading out other aquatic plants (University of Minnesota Web site, www.extension.umn.edu).

### Conclusion

The presettlement southern boreal transition forest that characterized the park has been significantly changed both regionally and in the park by a combination of logging, fire suppression, and development. Alternative 1 would continue present fire management, resulting in the treatment of an estimated 5–10% of the park's forested communities, a minor benefit to parkwide vegetation. Impacts to vegetation from illegally cutting firewood and from continuing to allow overnight visitors to camp at sites in groups larger than intended, to gather dead and downed firewood, and to use or create undesignated sites without a large-scale restoration effort could result in severe damage on 35%–55% of the park's existing sites, a major localized impact to vegetation, and a minor parkwide impact. Despite the potential for localized impact, the integrity of the park's vegetative resources would remain intact, and therefore continuing these actions would not result in impairment. Allowing fires at all sites has only had negligible or minor impacts on vegetation to date, but could result in isolated cases of moderate or major impacts in the future. Minor localized impacts to park vegetation from expanding visitor facilities or building trails would also result from the implementation of this alternative.

At-large houseboat mooring could result in moderate localized damage to aquatic vegetation from passengers going back and forth from the boat to the shore. The impact parkwide would be negligible. The effect of increased turbidity from boat propellers would likely be negligible to minor, and it would only occur in shallow water. However, the physical impact of waves or of boats colliding with plants might be moderate locally. The impact of wave erosion of banks may be minor to moderate on a parkwide basis because motorized use is so widespread, but no data are available to assess this. Severe localized effects on native vegetation from the invasion of certain aggressive exotic aquatic plants, including purple loosestrife and Eurasian watermilfoil, are possible without increased funding for monitoring and removal. Despite the potential for even these major localized impacts from the introduction of exotics, the impacts from the use of motorboats and houseboats remain localized and are not anticipated to impair the integrity of the park's aquatic vegetation resource, even in the 20-year span of time covered by a general management plan. Major adverse impacts on the structural diversity of shoreline aquatic vegetation have resulted from water level management; minor to major benefits from the implementation of the International Joint Commission's 2000 order are anticipated.

## WATER QUALITY AND WATER RESOURCES

### Analysis

**Impacts Related to Overnight/Day Use.** The use of overnight or day use sites, particularly those that do not have vault toilets, can result in human waste or leaching from pit toilets washing into waterbodies. Most pit toilets in the lakecountry have been replaced with vault toilets, and all remaining in the lakecountry are scheduled for replacement in 2000. Compared to the volume of the lakes, the reduction in biological oxygen demand or increase in nutrients or bacteria associated with these actions are a negligible impact to water quality.

**Impacts Related to Other Development.** The development of additional lakeshore campsites, campgrounds, visitor center facilities, and trails would result in erosion as described under "Soils," which would in turn increase turbidity. At-large camping in both the lakecountry and backcountry by houseboaters, primitive campers, and overnight tent campers could result in soil loss through the trampling of vegetation and the compacting of soils. Erosion would increase turbidity in drainages leading into both the large and interior lakes. The extent of either problem is unknown, but likely to be restricted to the lakeshore areas themselves and minor on a parkwide basis because of this restriction. Boats may also adversely affect water clarity as sediments are stirred up, particularly in shallower waters. This impact is negligible in depths greater than 10 feet (3 m), but may be detectable in shallow water, a minor impact (Asplund 1996).

**Impacts Related to Houseboat Graywater.** Given the assumptions stated in the "Methodologies for Analyzing Impacts" section, the amount of graywater dumped from houseboats into the park portion of the Namakan basin in a season would range from about 216,000 to 288,000 gallons (830,000 to 1.1 million liters), and from 228,000 to 304,000 gallons (877,000 to 1.17 million liters) in the park portion of Rainy Lake. This is a tiny fraction of the lake volume in both cases (both basins are billions of gallons) and a negligible impact to water quality parkwide. However, graywater contains nutrients and suspended solids that could build up if houseboats moored in shallow bays for more than a few hours, with possible minor to moderate localized degradation, particularly to oxygen levels as a result. The park has not collected water quality data at sites where houseboats moor, but park staff note that graywater discharges are sometimes visible and have resulted in occasional public inquiries or critical comments (park staff, pers. comm. Nov. 1999). Current policy allows two houseboats to moor at developed sites, and many sites are purposely located in calm, shallow bays. Similar pollutants are added from pit toilets at campsites, or from undeveloped sites without toilet facilities.

**Impacts Related to Recreational Use.** Motorboats and, to a much lesser extent, fixed-wing aircraft and snowmobiles (when lake ice melts in the spring) have the potential to emit hydrocarbons and even toxic breakdown products into the park's lakes. Again, no park-specific data on this potential problem have been collected, and many assumptions have been made to portray the most reasonable analysis of the impact of these sources on the park's water quality (see "Methodologies for Analyzing Impacts"). By applying two different sets of assumptions to capture the lower and upper reasonable end of emissions, motorized watercraft annually expel an average of between 76,000 gallons (287,000 liters) and 87,000 gallons (329,000 liters) of hydrocarbons (gas-oil mixture) into the lake. Assuming 5% per year of motorboats switch to cleaner engines (the low-end estimate assumes 25% of motorboats and 50% of houseboats are already using this cleaner technology), this amount would be reduced to between 60,000 and 68,000 gallons (232,000 liters to 257,000 liters) per year in 10 years. Over the life of the plan motorized watercraft would emit between about 1.35 million gallons (5.1 million liters) and 1.5 million gallons (5.7 million liters) of this oil-gas mixture into Rainy Lake. Using the low-end assumptions and the 1999 watercraft-hour numbers, emissions into the U.S. side of the park's large lakes would be approximately 100,000 gallons (378,000 liters) per year in Namakan, 105,000 gallons (396,000 liters) per year in Kabetogama, and 40,000 gallons (94,000 liters) per year in Sand Point Lake. The 1999 watercraft hours for the U.S. side of the park's large lakes show about 180,000 hours of use on Namakan, 188,000 hours on Kabetogama, and 70,000 hours on Sand Point. Over the 20 year life of the plan, fuel emitted from motorized watercraft is estimated to result in about 1.9 million gallons (7.2 million liters) of oil-gas mixture in Kabetogama, 1.8 million gallons (6.8 million liters) in Namakan, and 700,000 gallons (2.6 million liters) in Sand Point. These are order of magnitude estimates only. In addition to oil and gas from motorboats, a total of about 40 fueling stations on Rainy Lake, Ash River, and Kabetogama, including 6 park stations, exist. Many of these are quite small; however, leaks and spills occur throughout the warm months and cause minor localized and temporary increases in petroleum products in the immediate area.

The recommended limit for water used for a public water supply is that it be free of oil and grease. A 1991 study found some isolated measurements of as high as 4 mg/L in locations of Sand Point and Kabetogama Lakes (Payne 1991). Because no data on actual concentrations of oil or grease are available, the impact of motorized boat use on this element of water quality in the park is unknown. Some of the lighter elements of leaked fuel will volatilize, and heavier elements will sink and/or bind with soil particles, removing them from the water column. However, because standards have been exceeded in some locations, the potential for moderate to major adverse impacts to water quality remains. Despite the potential for localized impact, the waters of the park's lakes remain class A —

that is, outstanding resources exhibiting exceptional recreational and ecological values. This likely means motorized watercraft have not impaired the park's water quality resource, although collection of data specific for determining the extent of contamination is required to be certain.

Incidental releases of the carcinogenic fuel additive MTBE (methyl tertiary butyl ether) may also occur in park lakes. MTBE is added to fuel in some states to oxygenate it and increase performance. However, it is not added to fuels in Minnesota, although fuels used in the state may occasionally be tainted with MTBE picked up from pipelines transporting it from outside the state. Tainting may add as much as 0.5% MTBE (Carlson, pers. comm. 2000). Gasoline from neighboring states (e.g., Wisconsin) may contain MTBE as an additive. Also, although Canada does not require an oxygenate in its fuels in Ontario, it is possible but considered unlikely that some do contain it (Bower, pers. comm. 2000). Even if all fuel used by boats on the park's lakes contained fuel fully oxygenated with MTBE (at 8%), concentrations assuming watercraft hour figures above would not exceed recently adopted EPA advisory standards for drinking water. Therefore, no more than negligible effects to water quality from MTBE are expected.

The process of combusting fuel creates several different chemicals (called PAHs or polycyclic aromatic hydrocarbons), some of which have been identified as possible ecological toxins or human carcinogens at very low concentrations (Agency for Toxic Substances and Disease Registry 1995). While some of the lighter of these compounds evaporate quickly, others persist in the water column and can pose a longer term threat to aquatic life. Others increase in toxicity in the presence of sunlight. The values that one research study found to have no observed effect of PAHs on zooplankton or fish have ranged from 0.003 to 0.009 ppb (µg/L) (Oris et al. 1998). No data on PAH levels in park lakes are available; however, PAH levels in other reservoirs were directly correlated with the level of motorboat activity, and ranged from 4.12 µg/L to 18.86 µg/L total PAH concentration during periods of heavy boating (Mastran et al. 1994). These are well below EPA criteria for the protection of human health for certain PAHs, but well above the same criteria for other PAHs. Assuming PAH contamination in park lakes to be the same, impacts to parkwide water quality could be moderate to major, with major localized impacts possible where motorboat use is concentrated and water is relatively stagnant. Impacts to human health depend on the regular consumption of fish and water from the lake. Despite the possibility of larger-scale impacts from the toxic effects of PAHs, aquatic wildlife and fisheries in the park appear to be somewhat stabilized, and water quality generally remains high as noted above. It is unlikely that existing levels of motorized use on the park's large lakes have impaired the water quality resource, although additional monitoring and testing specifically for the presence of these chemicals in water and aquatic biota are needed to know for certain.

Boat tours take place on Rainy Lake and in the Kabetogama-Namakan basin; however, these boats are on the water about 60 hours per week for a 12-week period, releasing about 2,000 gallons (7,500 liters) of oil/gas mixture into the lake per year. Motorized boats would continue to be allowed on seven interior lakes under alternative 1; however, only incidental motorized boat use occurs on any of the interior lakes except Mukooda. Four commercial motorized boats and an unknown number of private boats use Mukooda Lake. Emissions from the four commercial boats (assuming use statistics similar to those for houseboats, and that all four commercial boats have 25HP two-stroke engines) would add about 780 gallons (2,950 liters) of oil-gas mixture to Mukooda Lake each year.

Private fixed-wing aircraft are allowed to land on seven interior lakes and all four major lakes in the park, and two commercial airplane pilots hold permits to fly into Kettle Falls and Shoepack Lake, respectively. Although fixed-wing aircraft engines can discharge small amounts of fuel, they are four-stroke. Fixed-wing aircraft use in the park is also substantially less than any other type of motorized use; during the warm season there are about 50–75 flights by private planes, 50–60 commercial round-trips, and an average of one trip per day (or about 500 hours/year) from the park's fixed-wing aircraft

(Hablett, pers. comm. 2000). Therefore, impacts to water quality from fixed-wing aircraft are assumed to be negligible.

### Cumulative Impacts

None of the alternatives would alter anything about snowmobiling in the park. No trails would be developed or removed, and no restrictions beyond those imposed now are anticipated in any alternative. Therefore, snowmobiling and its impacts to air or water quality are considered outside the study area and fall into the "cumulative impact" category, as they have additive effects on water quality.

Snowmobiling in the park is a rapidly increasing winter recreational activity, and observations by park staff indicate the majority of in-park snowmobile use occurs on Kabetogama Lake. While little research has been conducted on the impacts to water quality of snowmobile use, snowmobiles use the same two-stroke engine as do motorboats, and they emit similar types and quantities of oil-gas mixtures and hydrocarbon compounds such as PAHs (Ingersoll 1999). It is unknown how much of this discharged fuel remains when spring arrives, or how exposure to air, cold, and other conditions interact with the fuel or its components. Sulfate and ammonium have also been found in melted snow samples at Yellowstone National Park in concentrations that were consistently higher along snowmobile trails and decreasing as distance from the trail increased (Hagemann and VanMouwerik 1999). Water quality sampling in the park in 1980 and 1981 did find ammonium and sulfide at levels higher than standards for the protection of aquatic life in Black Bay and Ash River (Payne 1991). Because the park is host to nearly 30,000 snowmobilers per year, the majority of whom use the frozen surfaces of Rainy and Kabetogama Lakes to travel, impacts from this source have the potential to be locally moderate or severe, particularly in the spring when pulses of pollutants are dumped into the lakes. Without data, however, the impact is unknown.

Oil, grease, and other substances are washed into the park's lakes from roads and parking lots as well. This, too, has a cumulative but negligible impact when combined with the effects of motorized boats on water quality.

Septic releases from park neighbors is also a cumulative impact, as its effects are additive with those inside the park, particularly from houseboats. As noted by the St. Louis County Environmental Health Department, "In northeastern Minnesota we have seen an increase in the level of lakeshore property use as well as a modernization of facilities without improving the sanitary systems to meet those increased needs" (St. Louis County to NPS Water Resources Division, Jan. 27, 1998). Surveys of downstream communities, including Rainy Lake and Jackfish Bay, indicate 35% of septic owners have detected seepage from their septic systems (A. W. Research Laboratories 1997). Most of the septic systems in these communities are within 100 feet of Rainy Lake (Olson, pers. comm. 1999). The characteristics of septic releases are similar in nature to graywater releases from houseboats, but nutrients and suspended solids, and the impact on oxygen in water, is at least double that of graywater alone (A. W. Research Laboratories 1997). Although the leakage is readily apparent, the impact of the leakage has not been, and is not, measured. Therefore the impacts are unknown, but potentially negligible to moderate.

No alternative would attempt to manage lake levels differently than others, although all alternatives include provisions for partnerships with neighboring entities to encourage resource protection. An example of this partnership is the ongoing cooperative effort between several agencies, private landowners, and others to work toward reestablishing more natural lake levels in the park's regulated lake basins. As a result of this effort, the International Joint Commission has released a supplementary order that will provide more natural hydrological conditions on Namakan Reservoir. Historically, the regulation of lake levels has resulted in altered magnitude and timing of water level fluctuations, removing much of the natural hydrologic variability the lakes would normally experience (Weeks and Andrascik 1998). Under the 1970 order, the average annual lake fluctuations have been 2.7 meters for Namakan Reservoir and 1.1 meters for Rainy Lake. This level of fluctuation is 0.9 meter greater than before the dams were built for Namakan Reservoir and 0.8 meter less for Rainy Lake. Lake levels have also peaked later (in late June or early July) than under natural conditions (late May or early June) and remained stable throughout the summer instead of gradually declining. This has had a major impact on the natural hydrology of the park. Under the 2000 order, the allowable overall fluctuation on Namakan Reservoir has been reduced to 2.0 meters, water levels will peak earlier, and there will be a summer drawdown. On Rainy Lake, the existing rule curve was widened slightly in the spring, and there will be a modest late summer drawdown. Despite these changes, continued regulation of both reservoirs will maintain less than natural variability.

### Conclusion

Dissolved oxygen or nutrient levels in the park's large lakes is affected in negligible amounts by human waste washing in from undeveloped sites, remaining pit toilets, or graywater from houseboats. Houseboats moored for longer periods of time in shallow bays could have minor to moderate localized adverse impacts on dissolved oxygen or nutrient levels. Failing septic systems on property adjacent to Rainy Lake (and presumably other large lakes since geologic and soil conditions are similar) add to this impact. Oil and grease standards for drinking water could be exceeded lakewide at times on the park's large lakes from motorboat exhaust emissions, fueling stations, or even snowmobiles; some individual measurements indicate these standards have been exceeded. The impact to the park's large lakes is unknown, but the potential for minor or moderate impacts exists. Incidental releases of MTBE from motorboats are also possible, although no standard is expected to be exceeded. Fuel combustion also creates PAHs, which are ecological toxins or human carcinogens at very low concentrations. The potential for moderate to major parkwide water quality impacts from PAH contamination released during combustion in motorized watercraft exists. It does not appear that PAH contamination, or releases of oil or gas from motorboats, have impaired water quality, although further testing for the presence and/or impacts from either is needed to know for certain. Snowmobiles, particularly on Kabetogama Lake, could have substantial cumulative effects on oil and grease or PAH levels, but many unknowns preclude analysis. Snowmobiles might also increase ammonium or sulfate levels in park lakes. Dam construction and operation on the park's major lakes has resulted in major changes in magnitude and timing of water level fluctuations, as well as a major reduction in natural hydrologic variability as a result of water level management to maximize hydropower output. Minor to major benefits to hydrology from the implementation of the 2000 International Joint Commission supplemental order could occur.

## FISHERIES

### Analysis

**Impacts Related to Parkwide Management Policies.** The existing park policy for fish and wildlife management calls for continued partnering with state managers for cooperative fishery management, and management of the park lakes to focus on sport fishing. This policy, along with management practices before the park was created, has sometimes resulted in conflicts in management policies and philosophies. As a result, harvests have exceeded established targets the majority of the last 15–18 years in Rainy, Namakan, and Sand Point Lakes, and 6 of the last 15 years in Kabetogama Lake. The target reflects actual conditions of the stock and is designed to maintain a healthy population with desired characteristics (MDNR and OMNR 1998). Walleye yields from Kabetogama Lake, for example, were 6.7 pounds per acre (7.5 kg/ha) in 1978, averaged 1.78 pounds per acre (2 kg/ha) in 1983–85, and averaged 2.9 pounds per acre (2.6 kg/ha) in recent years (1984–93; see Chevalier 1977; Kallemeyn 1986; Eibler 1995). This is despite evidence from researchers (Adams and Olver 1977) that lakes of similar size and volume located on the Precambrian shield are normally not capable of sustaining yields of percid (perch, walleye, and sauger species) greater than 1.3 pounds per acre per year (or 1.5 kg/ha/yr). (Actual harvests of walleye have also consistently exceeded potential yields estimated with the morphoedaphic index (MEI). The MEI is derived from two factors: (1) the mean depth of the waterbody, and (2) the total dissolved solids concentration in the water (Ryder 1965). In recent years, a temperature adjusted MEI has been used to project potential yields for the park lakes and other border waters (MDNR and OMNR 1998)).

When yields are higher than a lake can sustain over the long term, reduced catch rates can result. This appears to be the case in Kabetogama. In 1946 the catch rate of walleye was 0.58 fish per hour, by 1978 this had declined to 0.23 fish, by 1983–85 to 0.22 fish, and by 1984–93 to 0.17 fish. Another factor that may have contributed to these variations was poor reproductive success due to low spring lake levels (Kallemeyn 1986; see cumulative impacts below). Catch rates up until 1985 were additionally affected by a large commercial harvest in Rainy Lake, when the Minnesota Department of Natural Resources bought out remaining Minnesota commercial walleye fishermen (Chevalier 1977).

In an attempt to rebuild the Rainy Lake walleye population, the Minnesota Department of Natural Resources has taken several actions over the years, including closing Black Bay in Rainy Lake to sportfishing during the early part of the spring when walleye spawn, resuming the stocking of walleye fry, and creating low-water spawning substrate by installing artificial spawning reefs (NPS 1994a). In 1994 the department imposed a slot limit, restricting the number of fish 17–25 inches that could be harvested. Similar concerns regarding over-harvest of walleye on the Namakan Reservoir lakes led to imposition of a slot length limit in 1998. In combination with recent changes to water levels (see "Fisheries" in chapter 3), slot sizes seem to be improving walleye population size and age distribution, even with the decision by the Department of Natural Resources to stop stocking walleye fry. Since shortly after these changes were made, angler harvest has steadily increased, and walleye have produced several above average strength year classes in Rainy Lake (Eibler 1997, 1999). Regardless of the cause, walleye population numbers appear to have compensated for harvests and other impacts to date.

However, fishing pressure and total harvests, particularly of walleye, on the park's four large lakes continue to increase and to exceed target levels established by the Minnesota Department of Natural Resources (and by the Ontario Ministry of Natural Resources on the Canadian side), despite slot limits and a relative decrease in the harvest of fish in the protected slot. Reproductive success, particularly for northern pike, also continues to be affected by low water levels in the spring. The number of anglers is expected to increase at the same rate as an increase in visitors over the life of the approved plan, at about ½% per year. An increasing fishing effort per angler could result in a larger harvest and lowered fishery reproductive success, which could destabilize the population and/or reduce it to low levels. Under these conditions, year-class success becomes even more dependent on abiotic factors such as regulated lake levels, leading to increased instability in the population and fishery (Colby et al. 1979; Forney 1980; Kallemeyn 1986). As noted above, ongoing monitoring and active management by both the Minnesota Department of Natural Resources and the National Park Service can prevent major impacts to fisheries, and no impairment from alternative 1 to this resource is anticipated.

The impact of ongoing management of the park's large lakes to focus on sportfishing currently appears to have a minor adverse impact, but has the potential for moderate or major impacts if mitigation fails, if water levels are regulated only for power production, or if fishing pressure increases without regulation.

Alternative 1 also calls for continued partnering with the state for cooperative fishery management. Historically, NPS and MDNR policies have differed with respect to the means of maintaining populations of fish at a certain size. In particular, the Department of Natural Resources views stocking as an acceptable tool to maintain a fishery, whereas the National Park Service uses it "only to reestablish native species in their historic ranges" (NPS 1988c). Currently, the only stocking in the park is of lake trout in Mukooda and Little Trout Lakes; however, in the recent past the Department of Natural Resources used stocking to try to increase the size of the walleye population (see "Chapter 3: The Affected Environment").

Similar to other areas studied by researchers (Laarman 1978; Li et al. 1996a), the stocking of walleye in Rainy and Kabetogama Lakes where naturally reproducing populations already exist was both biologically and economically inefficient. Such stocking programs also have the potential to harm native stocks if a nonnative, less hardy genotype is introduced. Other impacts resulting from the stocking of nonnatives may include the displacement of native fish, the introduction of diseases and parasites, and the disruption of aquatic food webs (Li and Moyle 1993). Introduced species may also immigrate into other lakes or serve as a source of fish for some visitors to introduce into additional lakes, both of which have occurred in the park.

The effects of most stocking done before the park's establishment is generally unknown. As noted in chapter 3, nonnative largemouth bass have been stocked in some of the park's interior lakes. Recent field and laboratory evaluations of the relationship between native northern pike and largemouth bass indicate pike outcompete bass where the two occur together (Soupir 1998; Stevens et al. in prep.). Despite this apparently competitive advantage, predation by largemouth bass is nonetheless affecting the aquatic community in Quill and Loiten Lakes, as neither lake originally had a large predator present before bass introduction. Stocking has also eradicated the native fish populations in both Beast and O'Leary Lakes, replacing them with nonnative rainbow trout. Currently, the park and the Department of Natural Resources are attempting to reverse this major impact to native fish in Beast Lake by reestablishing native northern pike. Native pike and walleye have already reestablished in O'Leary Lake naturally from Namakan Lake.

**Impacts Related to Recreational Use.** As noted in the "Water Quality" discussion, graywater from houseboats exerts a biological oxygen demand on water and contains nutrients and suspended solids. Although dumping graywater may either temporarily displace fish or close some localized areas (such as small, quiet bays) to fish use for much of the summer, no research exists on the extent of this problem, or whether it is a problem at all. Therefore, the impact of graywater is unknown.

The extent of any possible toxicity from emissions from motorized boats is also unknown. Toxicity from PAHs, or the oil-gas mixture itself, can occur at much lower concentrations than this. PAHs from crude oil have caused genetic damage, mortality, and malformations in fish eggs at concentrations of 0.7 ppb (µg/L) (Carls et al. 1999). The level at which observable effects on fish growth (using minnows) was found to be 0.009 in one study, and varied from 0.003 µg/L for zooplankton reproduction to 0.007µg/L for zooplankton survival in another (Newsted and Giesy 1987). Exhaust can also strip oxygen and have toxic effects on fish functioning (Tjarnlund 1995). Although no park-specific data exist, as noted above concentrations of total PAH ranged from 4.12 to 18.86 µg/L in other studies and were directly linked to motorboat use. In Lake Tahoe PAH levels ranged from 0.005 to 0.070 µg/L. In the absence of data for park lakes, it is impossible to determine whether PAH is adversely affecting fish; however, given the low levels known to have observable effects, it is possible that both fish and the food source for fish in some cases (zooplankton) may be experiencing lower growth rates or reduced reproduction or survivability. This could be a negligible to major adverse impact on fish populations. The study of effects of PAH on fish or other aquatic biota is newly emerging, however.

and no conclusions on whether fish in park lakes or anywhere in a natural environment are impacted by PAH releases is yet possible.

Besides pollutants, motorized boats affect fish habitat through wave action, causing bank erosion and the loss of plant cover. In shallow water particularly, boats moving even at slow speeds of 6 to 8 knots can generate waves near the maximum size produced by that boat (Warrington 1996). Propeller wash in shallow areas can also result in increased turbidity, which settles on and covers gravels used to spawn (Campbell 1954). Visitors accessing campsites or day use sites, particularly in undeveloped areas where no formalized entry is available, can affect the shoreline through trampling, which can alter flow regimes and eliminate the protective cover offered by overhanging banks (Cole and Landres 1995).

No direct adverse impacts to fish from noise or movement of motorized boats or fixed-wing aircraft are expected, as propeller action and boat movements studied for some groups of fish did not disturb them directly (Lagler et al. 1950).

**Cumulative Impacts**

Fish in the park show elevated levels of mercury, as described in chapter 3. Bioaccumulation of mercury through the food chain is considered responsible for these high levels; the source is most likely atmospheric and originates some distance away from the park. Mercury could affect fish populations through reduced reproductive success from the toxicity of maternally derived mercury to embryonic and larval stages (Wiener and Spry 1996). As of 1985, researchers found no evidence of mercury affecting fish survival in park lakes (MPCA 1985), despite high enough concentrations in fish tissue to require consumption advisories. Fish-eating birds, mammals, and humans may experience nervous system damage, reproductive disorders, or birth defects as a result of eating fish with high mercury levels ([illegible] 1996).

Numerous research studies have recently proposed changes to lake temperatures in boreal lakes that may result from global climate change, with resulting changes in aquatic habitat (McKnight et al. 1996). The specifics will vary depending on lake features and in-lake processes, such as those described in the "Water Resources" section (Schindler et al. 1996). However, modeling results indicate water temperatures near the surface may increase and deeper water may experience longer periods of low or no oxygen (Stefan et al. 1996). Conceivably, such changes could benefit nonnative warmwater fish species such as largemouth bass, while adversely affecting native cool and coldwater fish species.

Rainbow smelt, which colonized numerous areas in the upper Rainy Lake watershed after being introduced by humans (Franzin et al. 1994), first appeared in Rainy and Namakan Lakes in 1990. The smelt is a predatory species that may replace plant- or plankton-eating fish that were the main source of food for top predators such as pike and walleye (Evans and Loftus 1987). This adds another trophic level to the food chain, potentially increasing mercury levels further in these game fish in the future, although preliminary results indicate this is not the case (Mathers and Johansen 1985; Kallemeyn pers. comm. Dec. 1999).

Regulated lake levels have been clearly negatively correlated with walleye and northern pike reproductive success in the park (Kallemeyn 1987; see chapter 3). Walleye require gravel to spawn; because spring lake levels have historically been low until late in the season, walleye have been unable to spawn in some cases (particularly in the Namakan Basin). Pike breeding success has also been tied to lake levels within three weeks of ice-out (Kallemeyn 1987). The new International Joint Commission order for lake levels that went into effect in January 2000 (see "Water Quality/Water Resources") would make great strides in increasing lake levels early in the spring and would have a possible major beneficial effect on walleye and pike spawning success in the Namakan Reservoir.

### Conclusion

The major walleye sportfishery in Rainy, Namakan, and Sand Point Lakes has been fished above target levels for the majority of the last 15–18 years, and in Kabetogama Lake for 6 of the last 15 years. Before 1985 walleye were also heavily harvested by commercial fishermen. Walleye and northern pike populations have also been adversely affected by managed lake levels, which have reduced reproductive success in both species, particularly on lakes in the Namakan basin. Predatory fish such as walleye and pike also show high levels of mercury, which have unknown pathological and/or reproductive effects, and along with other coldwater fish species, they may be adversely affected by temperature and oxygen level changes resulting from global climate changes. Other pollutants, including MTBEs and PAHs from motorboat exhaust, are also undoubtedly present in the lakes. The concentration of either is unknown, but lakes with similar or less motorboat use have concentrations of PAHs that are considered above those where observable toxic effects to fish occur. The combination of these factors could have major adverse effects on the sport fishery. However, creel surveys indicate sport harvests remain relatively high, perhaps indicating the cumulative impact is not a major one, or that impacts are mitigated somewhat through closures, slot limits, creation of spawning habitat, and changes in water levels. Future additional changes in the hydrologic regime in the park's large lakes should stabilize reproductive success and sport fishery populations further. If mitigation measures continue, if sport fishing pressure does not increase beyond what the fishery can withstand, and if water level management returns to near natural conditions, the apparent ability of the lake's sport fishery to maintain harvests beyond what researchers say similar lakes can sustain could continue indefinitely. Therefore, no impairment of the park's fishery resources from actions in alternative 1 is anticipated.

## WILDLIFE

### Analysis

**Impacts Related to Park Management Policies.** As noted above, suppressing fire has resulted in the accumulation of undecomposed debris, where the "nutrient capital" of the ecosystem is stored (Heinselman 1996). Fire normally releases this capital on a regular basis and creates openings in the forest canopy. The combination brings about a high-nutrient growth of shrubs, herbs, and young trees favored by many native species of wildlife, including moose and deer. Both of these species prefer to winter in forests where some percentage of the canopy has been burned or clear cut (Heinselman 1996). Chapter 3 gives densities for both species in the park. Presettlement densities of these species are unknown, so changes in the relative density since that time are also unknown. However, in the region of the park, deer populations tend to be larger outside the park on adjacent public lands, where logging is ongoing. Densities of moose increased five-fold in nearby Superior National Forest following a 1971 fire (NPS 1994a). These indicators suggest populations for both would increase if a larger percentage of naturally caused fires were allowed to burn, or to burn over a larger area, in order to create openings in the canopy and to release nutrients that would stimulate the growth of young plants. Given the continuation of fire management practices, densities of both species would likely either stay at their present level or decrease. This is a negligible or minor impact compared to existing conditions at this time; however, fire suppression and logging may have exerted a major impact on ungulate population densities in the 20th century, a problem that fire management as it is currently practiced in the park is unable to correct.

Fire management over the century has also almost certainly eliminated habitat and had adverse impacts on populations of amphibians, reptiles, birds, and non-ungulate mammals dependent on recently disturbed upland areas. These include the northern leopard frog, crows, robins, several warblers, meadow voles, meadow jumping mouse, red fox, and striped skunk. Beaver in particular have increased in numbers inside the park, at least in part because of an increased abundance of their favorite food trees, aspen (see "Vegetation" above and NPS 1988a). It may also have benefited those whose habitat lies in more mature, largely undisturbed second-growth forest. These include a wide array of forest warblers, blue-spotted salamander, spruce grouse, goshawk, chipmunks, red squirrels, and black bear.

**Impacts Related to Overnight/Day Use.** Wildlife populations can experience direct impacts from the presence of humans at campsites. Some are adverse and cause wildlife to abandon the site either temporarily or permanently. These include higher than natural noise from such sources as conversations, music, motorboats, generators, and night light from lanterns or other sources. Birds that normally nest on the ground, in shrubs, or in small trees tend to avoid campsites (Cole and Landres 1995), as do amphibians, reptiles, and mammals requiring this habitat type, since disturbance tends to be severe in developed or well-used campsites. Birds requiring shrubby habitat in the park are identified in table 11.

Campers may also attract certain wildlife because of the increased food source they represent. Small mammal populations can be significantly greater at developed or well-used campsites than in adjacent forests; several bird species, such as robins and other ground foragers, are also attracted to campsites (Cole and Landres 1995). These tend to also be forest-dwelling wildlife species, or species that occupy isolated trees in more open habitat. Because campsites occupy only a small portion of the park, beneficial or adverse impacts to the distribution and abundance of wildlife species would be negligible parkwide, although certain individuals or family groups might experience major adverse or beneficial impacts from the creation and use of developed sites proposed in alternative 1. However, the full build out of 400 sites along the lakeshore would mean that few or no long stretches of shoreline would be without humans. To some species more wary of humans, such as loons or mink, this could be a minor or moderate impact throughout the entire shoreline of the park's large lakes.

A possible minor impact to black bears from a 100% increase in the number of developed campsites could occur if alternative 1 was implemented. The number of reported bear incidents in the park has ranged from 15 to 80 per year in the last few years. Such incidents are likely to increase with more developed sites and may even double if the number of developed sites is doubled, forcing park staff to move or destroy bears or to close sites in some cases.

At-large camping and houseboat mooring, tent camping outside core areas, and the creation and use of social trails to find firewood would continue under this alternative in the lakecountry and backcountry, with similar impacts to those described for developed or well-used undeveloped sites above. However, this practice might also result in impacts associated with human intrusion into otherwise relatively undisturbed habitat. As noted above, individuals of some species are attracted to sites of human activity. Others may habituate to regularly occurring nonthreatening noise or the presence of humans (Knight and Temple 1995). However, most wildlife that are rarely disturbed by humans expend greater energy in avoiding people when they do encounter them (Gabrielsen and Smith 1995). They may flush from nests or take flight more frequently, run or fly a longer distance, and/or respond when humans are farther away than habituated wildlife. The strength of the escape response also seems to be larger when wildlife encounter humans moving unpredictably, traversing rather than staying on a path, for instance. In the extreme, the loss of energy in running or flying from humans can mean reduced reproductive success or survival in young or adults (Gabrielsen and Smith 1995).

Loons are an example of a species where some individuals may habituate to human disturbance, while others appear to abandon nesting habitat. Loons nesting away from human activity appear to be more sensitive to disturbance, particularly in the early stages of nesting (McIntyre 1988). Although data are inconclusive, it may be that loon reproductive success on interior lakes used more heavily during this sensitive period (such as the boats on interior lakes program) is lower, given similar size and quality of habitat, than for birds nesting on interior lakes without boating or other heavy use. For instance, although seven adult loons were counted on the park's heavily used Chain of Lakes (the focus of the boating program), no young birds were observed in 1999 (NPS unpublished data).

Walking to and from boats can trample aquatic vegetation or result in the erosion of overhanging banks or shoreline marsh. These are potential habitats for aquatic wildlife, and human activity can greatly reduce their structural diversity or eliminate them altogether. Although camping or mooring at large may have severe adverse impacts on individuals or family groups of wildlife, parkwide the impact is probably small enough that it could not be measured.

**Impacts Related to Proposed Development.** Development, including of trails, developed sites, and park facilities, indirectly affects wildlife through the removal of soil or vegetation that serves as habitat or a food resource. Soil is also compacted, eliminating or greatly reducing the pore space and ability of soil to hold moisture or soil organisms, such as mites, responsible for the decay of detritus and the release of nutrients in the boreal ecosystem. Eliminating the surface organic layer of soil also eliminates habitat for a variety of invertebrate species, including snails, sow bugs, and fly larvae, which also serve as prey for insectivorous wildlife. Removing vegetation removes a food resource for some herbivorous wildlife, and it reduces structural diversity of habitat for others. Reducing this diversity can reduce the distribution and species diversity of birds and insects (Strong et al. 1984; Cole and Landres 1995). Because the total acreage of developed areas in the park remains a small percentage of the park total, the impacts of development proposed in alternative 1 would be negligible parkwide. Localized impacts could be severe, however.

**Impacts Related to Recreational Use.** Wildlife species are subject to disturbance from humans hiking, fishing, driving cars, or operating snowmobiles, and from fixed-wing aircraft or motorboats. In some cases, wildlife react to the noise or presence of humans or their machines; in others, it is the access that vehicles provide (particularly nonmotorized boats, such as canoes, or snowmobiles) to otherwise relatively undisturbed habitat. Snowmobiles, particularly those moving at speeds greater than 10 mph (16 km/hr) are known to alarm deer, causing them to move away from the vicinity of trails and in some cases to establish larger winter ranges (Knight and Cole 1995a, 1995b). These behaviors mean an increased expenditure of energy in already harsh conditions, which could lead to increased mortality.

Because Voyageurs is a water-based park, activities associated with recreational boating, such as fishing, water-skiing, touring, and even wildlife viewing from boats can have major impacts on some species, in particular nesting waterfowl and raptors (Knight and Cole 1995b). Cormorants, gulls, herons, white pelicans, osprey, and common terns and bald eagles (see "Species of Special Concern") are particularly susceptible to disturbance from recreational boating, as all nest near the shore. Noise from boats (or snowmobiles before ice-out in May) can cause energy loss from attempting to escape, with reduced reproductive success (Bowles 1995). Some species can be particularly disturbed by slow-moving or stopped vehicles, or humans on foot (Anthony 1995).

Escape responses to human disturbance can be energetically "expensive" to wildlife for two reasons. Feeding animals stop eating when disturbed, and disturbed animals expend energy to run or otherwise move away from the source of sound. Running or flying increases an animal's metabolism twenty-fold over the resting rate (Mattfield 1974). The loss of nutrients or increased energy expended can ultimately mean that reproduction or migration, or even survival, are compromised (NPS 1994a). If the noise is quite loud, animals can panic, and injuries or separation between parents and their young can occur. Birds flushing nests can leave eggs or young vulnerable to cold or predation. Although some individuals of some species will habituate to nonthreatening continuous or frequently occurring noise below a certain threshold, usually 70 dB, some apparently do not (Bowles 1995).

Besides impacts from noise, motorboats can result in wave action that destroys shoreline habitat used by aquatic wildlife. Boats can also cause "passive" disturbance to wildlife feeding on fish or other aquatic prey. Even those motionless on the water can be avoided by fish-eating raptors, such as ospreys and eagles. If alternative foraging areas are not available, passive disturbance can result in less food intake, or more energy expended in finding alternative food resources (Anthony et al. 1995).

The extent of impacts to wildlife from motorized use is unknown; however, because motorboat use of the large lakes is extensive, there could be a moderate to major localized impact, and a minor to moderate impact to wildlife throughout the entire lakecountry.

Fixed-wing aircraft, which are allowed on Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda Lakes, may also have moderate to major localized impacts on wildlife occupying habitat on or near the lakes. Fixed-wing aircraft can emit noise at decibel levels known to cause panic in some species, particularly on take-off. As noted above, the ensuing escape response can result in injury, separation of parents and offspring, energy loss, or indirect impacts on eggs or young through exposure. Notably, all seven interior lakes where fixed-wing aircraft are allowed have loon territories; one has an eagle nest.

**Cumulative Impacts**

In addition to development and resulting habitat modification, upland wildlife species in the park have been affected by logging and fire suppression. Logging in adjacent forests may create openings for the growth of forbes and grasses preferred by ungulates, and moose and deer may both be preferentially occupying these lands as a result. Other wildlife dependent on these openings may also be more abundant on neighboring public lands than in the park. Species richness of forest birds may be higher as well, as a variety of habitat types rather than primarily second-growth forests are available.

Wildlife in the park and in the region are also subject to a number of pollutants. Many fish-eating birds in the park have been found to have very high levels of methylmercury, for example, with loons having higher levels than all others tested (Derr 1995). Loon feathers averaged 11 ppm of methylmercury; this may be high enough to decrease reproductive success and/or alter the behavior of juveniles. Red-necked grebes, common mergansers, and hooded mergansers also had high levels of mercury in their blood and feathers, but not higher than has shown to be problematic for reproduction (Derr 1995). Fur samples from river otters in the park show the mean concentration in fur is higher than from otters in industrial parts of Wisconsin (MPCA 1993). One sample was very near that shown in experiments to be the lethal level for this species (Route and Peterson 1988).

Regulated water levels have been implicated in adverse impacts to many aquatic or semi-aquatic mammals, including beaver, muskrat, and otter; a variety of shore and marsh nesting birds; and the benthic invertebrate community. Winter drawdowns on the Namakan Reservoir lakes resulted in beaver lodges out of the water and inaccessible to beavers. One study (Smith and Peterson 1991) found adults on Namakan Reservoir lost a larger portion of their body weight, and kits gained less weight, than those on stable inland ponds. Densities of muskrats in prime habitat of Rainy Lake were much higher than those on Kabetogama Lake, where lake level fluctuations are greater (Thurber et al. 1991). Otters, which use shallow backwater bays as habitat, were less abundant in these areas in the winter on the lakes of Namakan Reservoir, again presumably due to larger winter drawdown and dewatering of some of these bays (Route and Peterson 1988).

Fluctuating water levels are attributed to significant losses of nests of some shore and marsh nesting birds. Studies have found that more than 60% of nesting attempts by red-necked grebes were destroyed by extreme variations in water levels. Water level changes adversely affect the western grebe, red-necked grebe, colonial nesting waterbirds, and the common loon. Loon nesting success in unregulated lakes in the region varies between 0.50 and 0.80 young fledged per pair per year (Reiser 1988). Rates on Rainy Lake were comparable at 0.57 young per pair per year in one study (Kallemeyn and Cole 1990), but rates were significantly less (0.25 per year) on Namakan Reservoir lakes. The most common cause of nest loss was rising lake levels in June, which accounted for 63.6% of losses.

Kraft (1988) also found greater instability in the benthic community in the Namakan Reservoir lakes and attributed it to species lost in shallow water during the drawdown period. This included isopods, snails, mayfly larvae, clams, and mussels.

Regulated lake levels have been clearly negatively correlated with walleye and northern pike reproductive success in the park (see "Fisheries" above). The new International Joint Commission order scheduled to go into effect in January 2000 would make great strides in increasing lake levels early in the spring and would have minor to major beneficial effects on fish, as well as wildlife that have been adversely affected by fluctuating lake levels.

**Conclusion**

Logging in the area before the park was established, combined with fire suppression continuing today, has altered wildlife habitat to favor species in mature second-growth forests. Continued logging in adjacent forests may create openings and shrubby growth used by moose, deer, snowshoe hares, porcupines, beavers, wolves, and several other species. The extent of this change is unknown, but presumed to be major parkwide because of major changes in the abundance and distribution of vegetative species. Development in southern transitional boreal forest in and outside the park may exacerbate this effect, although the park's contribution to habitat loss through development, including from additional campsites, trails, or facilities, is negligible.

Wildlife species in the park and in the region are also adversely affected by human activity or intrusion into otherwise relatively undisturbed habitat; such effects can be severe on individuals, family groups, or nesting colonies. The adverse effects of disturbance can add to existing stressors, such as water level fluctuations, mercury contamination, poor weather, or predation, to result in reproductive failure for individuals or colonies of waterbirds, for example. Mitigations such as area closures or changes in water level regimes could minimize the extent of this impact. In this context the additional impact of continuing at-large camping is probably not large enough to be measurable (i.e., negligible). Aquatic and fish-eating wildlife would experience minor to major benefits from efforts to return lake levels to conditions closer to those occurring under natural conditions.

Full build out of about 400 campsites along the lakeshore would mean that few or no long stretches of shoreline would be free of humans. To some species more wary of humans this could be a minor or moderate impact throughout the entire shoreline of the park's large lakes. In some cases, establishing campsites or a campground has a negligible benefit to wildlife attracted to human activity. A minor impact to bears from increased human conflicts is expected.

Recreational use can have localized or even parkwide adverse effects on wildlife throughout the lakecountry due to noise, passive disturbance from the presence of boats or humans, or the destruction of habitat by wave action. These effects could be moderate to major localized impacts, or minor to moderate impacts to shoreline species throughout the lakecountry.

Despite the potential for more severe localized impacts, no impairment of populations of park wildlife from continuing to implement actions in alternative 1 is expected.

### SPECIES OF SPECIAL CONCERN

#### Analysis

**Bald Eagles.** *Impacts Related to Park Management Policies* — Existing park management policies are to follow the regulations of the Endangered Species Act in protecting any species that fall under its jurisdiction. This means that the unauthorized taking of eagles through direct or indirect means, or adverse effects to critical habitat, cannot occur.

As noted in chapter 3, eagle productivity in the park is lower than in some neighboring forests and in Minnesota overall. In Minnesota, productivity averaged 1.15 young per occupied nest in 1973–91. During these same years productivity in the park averaged 0.63 young per occupied nest (Grim 1999a). Productivity in the park has improved in recent years, however. Of the 52 territories counted in and immediately adjacent to the park in 1999, 39 were occupied by eagle pairs attempting to breed and 25 successfully raised at least one young (Grim 1999a), resulting in 1.03 young per occupied nest in 1999 and 1.00 in 1998. This is a 17% increase over the average of the previous 10 years, but still lower than for other neighboring forest lands or for the regional bald eagle population (Bowerman 1993; Nelson 1995; Eckstein et al. 1999; Grim 1999a; USFS 1998, 1999).

*Impacts Related to Recreational Use* — Eagles in the park seem particularly stressed by slow-moving boats (including fishing boats, canoes, and kayaks), campers, hikers, or visitors using islands and shorelines during the day (Fink 1992). Of these, they are more disturbed by people on foot than in boats. Studies of eagles in other parts of the country confirm these findings (Grubb et al. 1992). When disturbed, eagles can leave the nest or "flush." Flushing the nest can adversely affect adult eagles through energy loss, but more severely affects eaglets or eggs (Anthony et al. 1995; Grubb et al. 1992). If noise or activity is very frequent, some eagles may either abandon a nest or not return to it the following year (Knight and Cole 1995b).

Direct impacts of human disturbance in the park are somewhat mitigated through the closure of the area within 0.25 mile (400 m) of occupied nests to visitors (through posting along the shoreline and in human use areas in the lakecountry). However, nest areas are not closed until ice-out occurs (usually around May 1). Eagles arrive in the park as early as February and begin courtship displays and nest building at this time. Research indicates they are much more susceptible to human disturbance during this and other early phases of reproduction, including egg laying, incubation, and the early nesting period (Grier et al. 1983). Also, although sites are protected in the park in the summer months, those considered part of the local population on lands immediately adjacent to the park do not receive similar protection unless they are on U.S. Forest Service lands.

Full build out of about 400 developed overnight and day use sites would leave few long stretches of shoreline in the lakecountry "human-free." Fraser et al. (1985) found that eagles in the Chippewa National Forest in Minnesota built nests farther from water on more developed shorelines, and farther from permanent human habitation (houses or cabins) than random points. This suggests some eagles would expend additional energy foraging, or perhaps elect not to occupy nests along the lakeshore. The extent of such an impact is unknown, and it could be negligible to major on the lakeshore population of eagles.

Snowmobilers have access to the nests by way of the frozen lakeshore (particularly Kabetogama Lake, where the majority of snowmobiling occurs), and can cause repeated flushing of nests, or of eagles off deer and other carcasses, their primary source of food until the lakes thaw. Such behavior can leave eggs or young untended and vulnerable to cold or predation, and cause depleted energy reserves of adults in a time when they already may be at a low. High levels of disturbance during the early spring can result in lower productivity or increased egg, juvenile, or adult mortality rates (Stalmaster and Gessaman 1984).

Motorboats can also both actively and passively disturb some bald eagles. As noted above, slow-moving and nonmotorized watercraft can be particularly disturbing to nesting eagles, as can loud boats (McGarigal et al. 1991). When either approach, eagles flush more often than when quieter, rapidly moving boats pass by. Flush distances for bald eagles in response to boats vary depending on the tolerance of the individuals, stage of breeding, and many other factors, although they average 443 feet (135 m) to 705 feet (215 m) (Anthony et al. 1995).

Eagles in the park are also subject to passive displacement. For instance, houseboats, fishing boats, canoes, or kayaks remaining stationary or slowly moving through the lake area may cause eagles to avoid foraging. This can be true of visitors trying to view eagles from boats as well. In one study, breeding bald eagles typically avoided foraging within 0.25 mile (400 m) of a stationary boat as long as it was in place, in this case throughout the breeding season (McGarigal et al. 1991). This form of disturbance is more prevalent and potentially more disturbing than active displacement because adequate food resources are essential to successful productivity, but it has not been widely investigated (Anthony et al. 1995).

The extent of impact to bald eagles from either active displacement in winter, or passive displacement in summer is unknown, but given the relatively low productivity, may be contributing to an overall moderate impact on the park's eagle population.

**Gray Wolf.** *Impacts Related to Park Management Policies* — The same park management policies as noted above for eagles apply to wolves, that is, to protect the species from unauthorized taking through direct or indirect means or from adverse impacts to critical habitat.

Between 40 and 55 wolves (about 1% of the state population) use areas in and directly adjacent to the park (NPS unpublished data). Densities in the park are comparable to those in other border area forests where wolves depend primarily on white-tailed deer (Route 1999a). Impacts to wolves in the park come from changes to their habitat, to that of their primary prey (the white-tailed deer), or from human activities. Wolves in wilderness and unaccustomed to humans can be quite sensitive to disturbance, can require large tracts of land with low human densities to survive, and avoid snowmobile trails and roads. Researchers have found it is not the roads or trails that keep wolves away, but the access they provide to humans who can deliberately, accidentally, or incidentally kill wolves by shooting, snaring, trapping, or through vehicular impact (Knight and Cole 1995b; Mech 1970; Boitani 1995; USFWS 1994). Wolves in packs whose territories extend into the park have suffered direct human-inflicted mortality (Gogan in prep.), and intentional or unintentional harassment (USFWS 1994). Wolf studies at the park from 1987 to 1991 indicate deaths of wolves from humans (trapping, shooting, vehicles) all occurred on land outside the park boundary (Gogan et al. in prep.).

As noted above under "Vegetation," the type and abundance of tree and other plant species in the park have changed as a result of logging and fire suppression. This may have created better deer habitat and an increased wolf population initially. However, with logging discontinued in the park, and fire suppression ongoing, deer habitat may be decreasing in the park and increasing on nearby public lands where openings in the forest canopy continue to be created through timber cuts. Wolves may also eat a larger proportion of beaver in the park. The extent of impact these changes have brought to the park wolf population is unknown.

*Impacts Related to Overnight/Day Use* — In a general sense, increases in visitor numbers and the development of campsites, trails, and facilities may have an adverse impact on individual wolves or packs in the park. However, current research shows wolf populations can be largely unaffected by human activities, except as they might facilitate access and harassment or killing by humans. Therefore, increased development or visitor numbers under current trends would have negligible impacts on park wolves.

*Impacts Related to Recreational Use* — Human-caused mortality has been the primary factor in wolf population declines across the world (Mech 1970; Boitani 1995). A study of wolves in packs whose territories include the park found that most of those found dead outside the park (6 of 8) had been killed by humans (Gogan et al. in prep.). This same study found no human-caused wolf mortality inside the park during this same period (1987–91). The U.S. Fish and Wildlife Service mandated the closure of 17 bays on the park's large lakes to snowmobiles in 1992 to protect against intentional and unintentional harassment of wolves. A report evaluating four years of observations of wolf activity and snowmobile use in these bays (some snowmobile use was recorded, despite closures) indicated that 93% of the time wolf activity was not evident if snowmobile activity was apparent (NPS 1996). These data support the agency's original hypothesis that access by snowmobiles was disturbing wolves.

Since the delisting of wolves as a protected species in Minnesota appears inevitable (DonCarlos 1997), the protection provided by the park's no-hunting rules and bay closures may become increasingly important regionally.

**Canada Lynx.** *Impacts Related to Park Management Policies* — The same park management policies as noted above for eagles apply to lynx, that is, to protect this species from unauthorized taking through direct or indirect means or from adverse impacts to critical habitat.

*Impacts Related to Other Development* — Human activities, such as winter maintenance of roads and trails, snowmobiling, and skiing, create packed snow trails that allow coyotes and bobcats to access traditional lynx winter habitat. Historically, deep snow conditions have kept these competitors apart (coyotes are also known to prey on lynx). Timber management practices may also have resulted in conditions favoring lynx competitors over the lynx itself. It has only been within the last century that coyotes have colonized the boreal forests, for example. Both species feed on the lynx's primary prey, snowshoe hares. Predation rates by coyotes on snowshoe hares have exceeded those of lynx in the Yukon Territories during periods when the hare population has been high. When hare populations are low, lynx reproduction slows and mortality of kittens is high. However, coyotes simply switch to different prey or habitat; this ability may contribute to the coyote's success as a competitor with the lynx. Although wolves may prey on lynx, scientists believe wolves are more likely to prey on coyotes and benefit lynx where all occur together.

Although lynx are able to adapt to the development of ski areas or predictable activity at predictable times, encounters with a limited number of users might elicit a different behavior response than frequent encounters, even with large groups of users. It is possible that, if a population of lynx exists in the park, packed snowmobile trails increase the ability of competitors to access lynx habitat or prey, indirectly reducing the population. The use of existing snowmobile, skiing and hiking trails in the park may also disturb or scare away lynx. Selection of alternative 1 would result in the addition of up to 48.6 miles (79 km) of new trails, which if located in boreal transition forest (mixed deciduous-coniferous) could remove lynx habitat. The occasional use of these trails might also disturb lynx.

Recreational use of designated facilities such as developed campsites is likely to have very little effect on lynx (USFWS 2000; USFS 1999b). The degree of impact compared to existing conditions is unknown and may be negligible to moderate.

**Floating Marsh Marigold.** A park population of this plant exists along a proposed trail route in alternative 1 between Kabetogama Lake and Marion Bay. If rerouting of this trail is not possible, the population would have to be moved, or impacts to it otherwise fully mitigated. The park would conduct site-specific surveys before any ground work was started.

**Other Species.** No impacts to the following species are expected under alternative 1.

Lapland buttercup
Northern bog lemming
Snapping turtle
White pelican

### Cumulative Impacts

Eagles may be experiencing impacts from a variety of sources, including toxic effects of pesticides (DDE, PCB residues), mercury, or other factors outside the park. Bowerman (1993) found that levels of DDE in blood collected from nestlings in the park during 1988–92 were similar to Great Lakes eagles and were significantly greater than inland populations. PCB levels were higher than other inland areas, but lower than in Great Lakes populations for the most part. Productivity was inversely correlated with DDE and PCB levels. Some researchers (Wiemeyer et al. 1984) have also found adverse impacts to productivity when mercury levels in bird (non-eagle) eggs exceed 0.5 μg/g, but others have found no relationship between mercury levels in the feathers of adults or nesting eagles and productivity (Bowerman 1993). Because it is a neurotoxin, mercury may impair flight or predation, and affect survivability as a result (Kramer and Redig 1997).

As noted above, productivity of the park's eagle population remains lower than that of neighboring forests and the regional population. While the impacts of individual elements may be unknown, the combination of stressors inside and outside the park appears to have had moderate to major impacts on the park's bald eagle population. The trend of lower productivity than surrounding public lands could continue, or it could improve to levels comparable to those in the region. The park's population represents 5% of the Minnesota population, and 2–3% of the regional (Northern Great Lakes) population (Kozie, pers. comm. 1999). Productivity in Minnesota remains high, and the relatively poor productivity in the park to date has had only a negligible or minor impact on the state or regional population.

Regulated lake levels have been clearly negatively correlated with walleye and northern pike reproductive success in the park (see "Fisheries"). The new International Joint Commission order would increase lake levels early in the spring and have a possible major beneficial effect on walleye and pike spawning success in the Namakan Reservoir. This, in turn, could benefit all fish-eating wildlife, including bald eagles.

Wolves have experienced impacts from habitat loss from development, the encroachment of human activity into otherwise relatively undisturbed habitat, and direct mortality, in addition to natural forces such as harsh winter weather or limited food supplies. Although these forces have combined to make the gray wolf one of the rarest mammals in the lower 48 states, the Minnesota population is doing well and is expected to be delisted as a protected species.

The Canada lynx was recently (April 2000) listed as a federal threatened species. Populations in the United States may have been affected by a loss of diverse, early successional forest habitat through fire suppression, the conversion of lands to agriculture, and the development of forested areas for homes and cabins. Highs and lows in populations of lynx in the Great Lakes region historically have been associated with the same in Canada, indicating lynx occurrence in this region is at least partially Canadian in origin. Recent records indicate lynx population levels immediately north of the border in Canada are lower now than in the past and that the number of animals immigrating into Minnesota and other border states has declined considerably since the 1960s and 1970s.

**Conclusion**

Cumulative impacts to bald eagles appear to have had moderate adverse impacts on relative productivity, and no impairment of this park resource is expected from the actions contemplated in alternative 1. This shows signs of improving and may continue to improve to levels comparable to other public lands in the vicinity. Full build out of about 400 developed campsites could have negligible to major impacts on eagles nesting along the shores of the park's large lakes through increased energy expenditures or nest relocation. In the park snowmobile access to nests in the early spring and the presence of stationary or slow-moving watercraft near the nest or in foraging habitat could be significant contributors to adverse impacts on bald eagle productivity, and no impairment from the actions contemplated in alternative 1 are expected to result in an impairment of this park resource. Toxins, including DDEs and PCBs, may be contributing to lowered productivity, and mercury may be adversely affecting the ability of eaglets to survive. The management of water levels in the park similar to natural, pre-dam conditions could provide some benefit to eagles by improving the condition of the fishery.

Wolves also appear to be vulnerable to impacts from humans, primarily from direct mortality of individuals in packs whose territories include the park. Although changes to wolf and deer habitat from logging and fire suppression may also have had substantial influences on population numbers, the extent is unknown. The removal of habitat as a result of development has not and would not have more than a negligible impact on wolves in and adjacent to the park under alternative 1. Although snowmobile use of the Chain of Lakes trail on the Kabetogama Peninsula may have had moderate or major adverse effects on some park wolves by opening the area to human use, mitigation in the form of bay closures on the park's large lakes to snowmobile traffic has presumably offset these impacts. Alternative 1 would result in no additional impacts on wolves, and no impairment of this resource from implementing actions in alternative 1 is anticipated.

It is possible that, if a population of lynx exists in the park, packed snowmobile trails have increased the ability of competitors to access lynx habitat or prey and have indirectly resulted in a reduction in the population. The use of existing snowmobile, skiing, and hiking trails in the park may also disturb or scare away lynx. Alternative 1 would result in the addition of up to 48.6 miles (79 km) of new trails, which if located in boreal transition (mixed deciduous-coniferous) forest, could remove lynx habitat. The occasional use of these trails might also disturb lynx. The degree of impact compared to existing conditions is unknown and might be negligible to moderate. However, no impairment of lynx is expected from implementing alternative 1.

## CULTURAL RESOURCES

### ARCHEOLOGICAL RESOURCES

**Analysis**

All alternatives under consideration in this plan would include continued efforts, as funding and staffing allowed, to identify, evaluate, plan for, protect, and share information about cultural resources.

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such as archeological sites, as directed by relevant historic preservation laws and NPS policies. Continued efforts to identify properties would improve the park's ability to better understand, protect, preserve, and interpret their nonrenewable cultural resources. The integrity of recorded, intact archeological sites would also be maintained, as identified in the *Cultural Resources Management Plan* and in future inventories. These efforts would prevent further damage to sites by managing vegetation to protect aboveground resources and by avoiding or hardening the surface of belowground resources. Cultural resources would also continue to be monitored through occasional, nonroutine patrols as time and funding permitted.

Under this alternative the limited park program to identify and evaluate significant cultural resources would continue on a project-by-project basis as funding allowed. Specifically, proposed projects would include increasing the number of developed campsites, houseboat mooring sites, and day use sites to a total of about 400 sites. However, given that federal legislation requires efforts to identify, evaluate, and develop appropriate mitigation measures for any archeological resources located within a given project area, the continuation of this limited inventory program and lack of comprehensive data would result in only negligible to minor impacts parkwide.

As with all alternatives under consideration, efforts to protect cultural resources through occasional patrols and public education would continue as funding and staffing allowed. Monitoring programs increase the park's understanding of the types and rates of visitor and natural impacts to cultural resources. They also allow the park to better plan for and respond to cultural resources requiring stabilization or other treatments resulting from vandalism, erosion, and other impacts. Continued public educational initiatives and programs are beneficial as they help increase the public's knowledge and appreciation of, as well as support for, park resources.

Under this alternative visitor use of undeveloped day and overnight sites would continue at the current rate. The use of certain undeveloped areas, however, would be limited or discontinued for resource protection or visitor safety issues if necessary. Visitor use of undeveloped areas would have the potential for impacts to cultural resources through the destruction of vegetative cover, accelerated erosion, and ground-disturbing activities. Given present funding and staffing levels, the frequency and coverage of patrols might not be sufficient to properly monitor and adequately stabilize sites and structures under this alternative. This would result in moderate to major localized impacts to sites; however, closing areas exhibiting these early signs would reduce impacts to negligible to minor parkwide.

The current trend of increasing party sizes for day use and camping sites, as well as the overall number of houseboats in the park, would continue. High visitation levels generally increase the potential for vandalism, artifact collection, and accelerated erosion due to the magnitude of visitor use in certain areas and due to the difficulty created by insufficient park staffing to monitor visitor activities. The current monitoring program for visitor use patterns and resource impacts would remain limited. This would result in moderate to major localized impacts to individual sites, but only negligible to minor impacts parkwide.

### Cumulative Impacts

All development actions in the park, including day use sites, tent sites, and houseboat mooring sites, would require some level of ground disturbance. Any type of ground disturbance has the potential to impact previously unrecorded archeological resources. However, given that any development within the park qualifies as a federal undertaking and would therefore be subject to compliance with section 106 of the National Historic Preservation Act of 1966, there is not a potential for major impacts to archeological resources parkwide. Gradual impacts from vandalism, artifact collection, and erosion as a result of vegetation being trampled and lost because of unlimited visitor use could cumulatively result in moderate to major localized impacts.

### Conclusion

Under alternative 1 the limited park program to identify and evaluate significant cultural resources would continue on a project-by-project basis as funding allowed, resulting in only negligible to minor impacts parkwide. The current park monitoring program would be limited in identifying archeological resource impacts in a timely manner at both developed and undeveloped sites; insufficient park funds would delay needed treatment and stabilization measures. While there would be a potential for moderate to major localized impacts, the implementation of area closures until funding and staff were available for stabilization would effectively reduce parkwide impacts to negligible or minor levels. No impairment to archeological resources would result from continuing to implement the actions in alternative 1.

## HISTORIC STRUCTURES

### Analysis

Under this alternative park staff would continue to follow the management recommendations for treatment and use developed in the 1990 *Historic Structures Management Plan* and would preserve 21 out of 76 properties containing multiple structures. Thirteen properties would be protected and allowed to moulder in their current state as ruins. The remaining 42 properties would likely be removed under this alternative; 34 of these properties have been determined to be ineligible for listing on the National Register of Historic Places and are awaiting concurrence by the Minnesota State Historic Preservation Office. The removal of the remaining few properties with potentially eligible structures would constitute an adverse effect and would require mitigation in consultation with the state historic preservation officer.

As with all alternatives under consideration, all of the park's current partnerships with other federal, state, tribal, local, and private agencies would be maintained, and additional partnerships would be pursued where possible. Partnership efforts with other public agencies, Native American tribes, and preservation and recreational use groups would enhance the preservation, protection, and use of cultural resources in the park. Also, such partnerships would serve to increase each partner's awareness of the nonrenewable nature and interpretive potential of cultural resources, as well as the stewardship responsibilities of the public. Additionally, it should be noted that under all alternatives properties currently under use-and-occupancy leases would be vulnerable, until their leases expire, to impacts resulting from unauthorized alterations or neglect of adequate maintenance that could affect the integrity of structures.

Under alternative 1 the park would continue to use historic properties for park operations and interpretation and to manage them as directed by current laws and NPS policies. Continued use of historic structures for park functions would be beneficial overall as it would ensure that these structures would receive routine maintenance and monitoring. Some rehabilitation to structures would be required for reuse and would be accomplished in a manner that would preserve their historic or architectural value. These modifications would result in moderate localized impacts to individual structures; however, such activities would have only negligible impacts parkwide. Additionally, while some structures would continue to receive preservation treatments, insufficient funding for subsequent public interpretation would leave many in a mothballed state vulnerable to vandalism and other visitor-related impacts.

Historic properties currently used as visitor destinations would continue to be maintained and available for public access under this alternative. Other identified historic properties, however, would be protected but not formally developed for public use. Continued public access would be beneficial as resources receive some degree of maintenance and monitoring as well as increased public appreciation and awareness. Inevitably, given the fragility of historic resources, continued access would result in minor localized impacts to individual sites due to visitor use; however, these impacts would be negligible parkwide.

### Cumulative Impacts

Adaptive use of structures through their preservation or rehabilitation for contemporary uses will be done in keeping with the "Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings" (NPS 1995c). The benign neglect or removal of historic structures is an adverse effect and would require mitigation in accordance with section 106 of the National Historic Preservation Act, as amended, and as set forth in the Advisory Council on Historic Preservation guidelines 36CFR800.

### Conclusion

Under alternative 1 retaining and preserving 21 properties, along with protecting 13 ruins in their present state, would be beneficial to the overall management of structures in the park. Removing a limited number of properties with potentially eligible structures would have major localized impacts to selected structures; however with required mitigation it would have only minor impacts parkwide. Continuing current partnerships with other organizations and agencies would be beneficial overall to the preservation of structures within the park. The continued adaptive use of structures for park operation and interpretive needs would also be beneficial because they would receive routine maintenance and monitoring. Modifications of individual structures would result in moderate localized impacts, but only negligible impacts parkwide. Continued public access and use of current visitor destinations would be beneficial overall, although visitor use would inherently result in some minor localized impacts to resources. No impairment to historic structures would result from continuing to implement the actions in alternative 1.

## CULTURAL LANDSCAPES

### Analysis

All alternatives considered in this document would include protecting the features of six cultural landscapes from inadvertent damage or destruction, as well as restoring a portion of the Ellsworth Rock Garden pursuant to its approved treatment plan. This would be beneficial overall to the six landscapes because their existing integrity would be protected from inadvertent damage or intrusions; however, there would be a potential for significant features to be lost due to vegetative overgrowth. Under this alternative vegetation control of landscape features, such as earthen embankments, would occur only at selected archaeological sites.

Cultural landscapes are present in three of the four developed areas of the park; however, they lack appropriate inventory and evaluation documentation. Further, except for Ellsworth Rock Garden, no planning strategies have been developed to guide future development and protect significant landscape features. Comprehensive plans are needed to assist in managing the potential impacts of other park operations. Specifically, the removal of exotic plant species, the restoration of vacated cabins, fire management, and natural environment restoration practices would have an impact on potential landscapes, in particular those associated with logging camps (which are primarily in primitive areas), homestead sites, and ethnographic landscapes.

Under this alternative the park's current program to inventory and document eligible landscapes would continue but would remain limited. While the lack of comprehensive planning documents would likely result in minor to moderate localized impacts, it would be negligible to minor parkwide.

#### Cumulative Impacts

The waterway transportation system of the voyageurs, along with its portages, forested uplands, rocky shorelines, and other geographic features, is part of a larger cultural landscape of the fur trade. Park legislation and this alternative would provide for vegetation management to reestablish an environment that more closely resembles that present during the time of the fur trade. While this would create a cultural landscape of the fur trade, it would have impacts on landscapes associated with historic activities occurring after the fur trade period — landscapes that have changed and will continue to change primarily as a result of regrowth of vegetation after logging, changes in recreational activities through the removal of cabins, and changes in fire management policies. Some specific landscape features, such as earthen embankments that indicate the presence of historic logging camps, would be protected through localized vegetation control, but the larger landscapes they are associated with would be reclaimed by vegetation.

#### Conclusion

Protecting six cultural landscapes from inadvertent damage or destruction would be beneficial as it would maintain their integrity and provide for the enjoyment and appreciation of visitors. The continued absence of cultural landscape planning documents would further complicate comprehensive planning and development initiatives in the park. This would result in minor to moderate localized impacts to individual landscapes; however, the impacts would be negligible parkwide. No impairment to cultural landscapes would result from continuing to implement the actions in alternative 1.

### COLLECTIONS

#### Analysis

Under this alternative, objects representative of the park's history would continue to be collected, catalogued, stored, and conserved at the park as funding and staffing allowed. Collections would receive regular maintenance and conservation treatment. Access to the collections would continue to be limited. This would necessitate a more focused scope for object acquisitions.

#### Cumulative Impacts

Given the park's mandatory compliance with federal curation regulations, no cumulative impacts are anticipated.

#### Conclusion

The management of collections under this alternative would be beneficial as new acquisitions would proceed at a more manageable rate, commensurate with park staffing to properly record and curate objects. Impacts resulting from the lack of adequate access to collections would be negligible. No impairment to collections is expected from continuing to implement actions in alternative 1.

735

### ETHNOGRAPHIC RESOURCES

#### Analysis

Until inventories of ethnographic resources were completed, the park would need to conduct site-specific surveys for ethnographic resources for each development activity. Increased use by visitors of areas containing ethnographic resources could lead to the degradation of these resources. There would be little or no impact on ethnographic resources due to access and use of areas for Native American ceremonial purposes.

As ethnographic resources were identified, the park would follow legal requirements and NPS policy to protect these resources.

#### Cumulative Impacts

No cumulative impacts were identified.

#### Conclusion

Greater visitor use of areas with ethnographic resources could lead to the degradation of these resources. However, no impairment to ethnographic resources is anticipated from continuing to implement actions in alternative 1.

## IMPACTS ON THE VISITOR EXPERIENCE — FIRE MANAGEMENT

### ANALYSIS

Wildland fire management includes suppression, prescribed burning, and fire use. Suppression and fire use could inconvenience visitors because of smoke and site or area closures. Prescribed burning could temporarily inconvenience visitors because of smoke and/or area closures. However, impacts on visitors from prescribed burning would be of short duration due to the nature of burns (that is, burning with higher fuel moisture, high duff moisture). Also, during the planning process for prescribed burns, impacts on visitor use areas could be eliminated or reduced by selecting wind directions that would ensure that smoke would not be targeted to these areas. Through planning, public notification, and education, wildland fire management activities at Voyageurs could inconvenience visitors but would have little effect on the impairing visitor experiences.

### CONCLUSION

Fire management activities at Voyageurs could inconvenience visitors but would have little effect on impairing visitor experiences.

## IMPACTS ON THE VISITOR EXPERIENCE — VISITOR USE AND FACILITIES

### ANALYSIS

#### Parkwide Management

**Facility Use Fees.** Continuing no-fee park access would be popular with visitors. The park would continue to provide an affordable destination for those seeking a northwoods destination.

**Overnight Permit System.** Establishing a no-fee permit system for overnight use would allow the park to collect more accurate visitor use data and improve the management of overnight use and related facilities. The park would try to establish a permit system that would minimize inconveniences to visitors. However, quantifiable visitor information concerning day use would continue to be limited, thereby preventing the development of a more comprehensive park visitor use database. As a result, management decisions would respond less efficiently to the broad range of visitor needs due to limited visitor data.

**Monitoring Programs.** Limited monitoring programs would continue to result in the inadequate collection of information concerning seasonal visitor use patterns, visitor needs and experience, and resource impacts generated by use. Over the long term, this lack of data could result in improperly addressing visitor needs, inappropriate visitor management, and a gradual deterioration of the natural environment in use areas, thereby diminishing the quality of the visitor experience.

### Water Management Areas

#### *Integrated Use Area (Motorized and Nonmotorized Uses)*

**Integrated Uses.** Minor conflicts would continue among visitors using motorized and nonmotorized watercraft in some areas of the four major lakes. Problems would occasionally occur since some users would not exercise proper boating etiquette.

**Overnight Houseboat Use.** By allowing an unlimited number of houseboats, a future increase in houseboat use could be accommodated. However, the absence of a houseboat quota would not ensure balanced in-water use over the long-term and would permit houseboats to potentially dominate recreational activity. As a result, adverse impacts parkwide to the experiences of other park visitors would occur.

**Fixed-Wing Aircraft Use.** Continuing commercial fixed-wing aircraft shuttles to Shoepack Lake and the Kettle Falls Hotel would provide for diverse visitor experiences and access options, benefiting visitors who desire to travel by this means. However, this service would likely continue to be used by only a small percentage of visitors.

Only a few private fixed-wing aircraft annually fly into the interior lakes of the Kabetogama Peninsula and the east portion of the mainland. This level of use would create temporary and localized adverse impact on the quality of visitor experiences but would generate negligible adverse impacts to visitor experiences parkwide.

Allowing no commercial fixed-wing aircraft use on Kabetogama Lake would continue to ensure that users on the lake and along the shoreline would experience a quiet environment much of the time.

**Boats on Interior Lakes.** Continuing to provide boats on several interior lakes would provide a unique visitor experience for the few visitors who hike to backcountry trail areas without having to portage a canoe. Damage to boats and disregard for regulations by some users would likely continue, thereby frustrating subsequent users and adversely affecting the visitor experience. However, considering the low volume of use parkwide, this impact would be negligible.

**Snowmobiles.** Snowmobiles would continue to dominate recreational winter use through travel on marked routes on the major lake surfaces, on the Chain of Lakes trail, and some off-trail use on the lakes. While the extensive trail system would provide a quality park experience for the majority of winter season users, negligible to minor conflicts would continue with the small percentage of visitors who access the park by nonmotorized means.

**Special Use Zone.** If applicants met current management policies for the special use zone they could continue to obtain permits for special events. Since snowmobile radar runs would no longer be permitted, people participating in these infrequent events would be inconvenienced since they would need to find a new location. However, those who feel radar runs are inappropriate in the park would appreciate that such runs are no longer permitted.

### Land Management Areas

#### *Developed Area*

**Visitor Centers.** Visitor center operations would occur year-round at Rainy Lake and during a five-month summer season at Kabetogama and Ash River. Operations at the Crane Lake ranger station would only occur sporadically throughout the summer season. Use at the visitor centers is projected to remain fairly stable, with a slight projected increase of 1% annually. Weekends during June, July, and August, as well as July 4th, are peak use times. For the past six years use at the visitor centers has remained relatively stable, with the majority of use focused at the Rainy Lake and Kabetogama Lake centers.

Currently, indoor space at the Ash River and Kabetogama Lake visitor centers is inadequate for exhibits, interpretive programs, and staff. As a result, educational offerings are limited, making it more difficult to convey the park's interpretive themes. Crowding at these facilities would likely continue, with adverse impacts on the quality of visitor experiences; the most overcrowded situation would be at the Crane Lake ranger station. Increased visitor use of these centers over time would result in a greater level of adverse impact.

**Parking.** Parking conditions at all three visitor centers and the Crane Lake ranger station would continue to worsen, especially during peak weekends, inconveniencing some visitors who would have to walk ¼ to ½ mile from their vehicles to boat launching areas or a visitor center. As a result, temporary and localized adverse impacts to the visitor experience would occur. This situation could also create more inconveniences for lodge owners, who might need to provide shuttle services to alleviate the problem.

**Boat Launches.** Visitors who access park waters by means of both motorized and nonmotorized watercraft share launching facilities. It is difficult for users of nonmotorized watercraft to use concrete ramps, and therefore they try to launch from sandy beach areas. Shared launches would continue to generate some temporary and localized adverse impacts to the visitor experience for the small percentage of paddlers.

**Bicycle/Pedestrian Facilities.** Bicycle/pedestrian systems along entry roads would not be provided at the Ash River or Rainy Lake visitor centers, requiring these visitors to use the road. As a result, localized adverse impacts to safety and the visitor experience would continue for bicyclists and pedestrians.

#### *Lakecountry Area*

**Day and Overnight Use Sites.** Under alternative 1 about 400 day use, tent, and houseboat sites could be developed, primarily in the lakecountry. Full development would result in 257 tent campsites (large and small), 3 small campgrounds, 4 group campsites, 108 houseboat sites, and 28 traditional day use sites. Approximately 40% of the lakecountry shoreline would be designated as high density (subarea 1), which allows three or more campsites within a ½-mile radius; the extent of this area would be greater under this alternative than under the modified proposed action or alternative 2. Additionally, an unknown number of undeveloped sites could be used during the day or overnight. This level of site development and permitted at-large camping would provide maximum opportunities for the widest range of users, affording the freedom of site selection and accommodating the greatest increases in overnight use of all the alternatives. However, this would result in undetermined adverse impacts to the visitor experience parkwide due to a higher degree of activity, noise, social encounters, and a diminished feeling of remoteness and natural quiet in lakecountry areas.

A range of camping opportunities at developed and undeveloped campsites, with sites supporting 9 to 72 people, would benefit a broad range of user groups. However, this level of development and use could infringe on the experience for surrounding users. If the capacity of developed sites was reached, and undeveloped sites were also used, a sense of crowding in certain areas could occur. The current need for day use sites would continue to grow over the long term if not designated a high priority for development.

**Day Use.** Day use of overnight use sites would continue until 4 P.M., benefiting many park guests who use developed site facilities during daylight hours. However, conflicts between overnight and day users would continue. Some visitors would be frustrated in trying to locate an overnight site since day use would be permitted until late afternoon.

**Use of Undeveloped Sites.** Allowing the use of undeveloped day and overnight use sites would continue to provide a convenient alternative to the use of developed sites for some users, allowing for unlimited use of the park. If sites were repeatedly used, resulting in a deterioration of the natural environment, the quality of the visitor experience could be diminished. Although users would be required to camp 200 yards from developed sites and ¼ mile from park developed areas, the use of undeveloped sites could create unanticipated crowded or noisy conditions for nearby users. Since undeveloped site use is permitted, visitors could not anticipate if other overnight users would camp nearby, thereby limiting the opportunities for selecting a site that is secluded.

**Fires and Firewood.** Fires would be permitted at developed and undeveloped day and overnight use sites only in metal fire rings. By allowing fires to be built at numerous sites throughout the park, benefits to the visitor experience would be sustained, particularly for day users. However, multiple fire areas at any given site would result in a diminished visitor experience as a result of environmental degradation.

Day and overnight users could continue to collect dead and down wood for fires. The visitor experience would be reduced at some sites since the visual quality and campsite environment would be reduced due to limb or tree cutting over the long term, even though prohibited by park policies.

**Visitor Destination Sites.** Use would continue at a few significant natural and cultural resource destinations. Only a few sites would offer visitors formal interpretive programs. This would continue to limit opportunities for visitor education and interpretive experiences related to park resources.

### *Backcountry Trail Areas*

**Summer Trails.** An expanded nonmotorized trail system that includes an additional 48.6 miles of trail would result in major benefits to visitors. The majority of trails would exist on the Kabetogama Peninsula, and trailheads would be accessible only by water. Only a few proposed trails would link destinations; most trails would comprise small "loops." Park guests without boat access would continue to have limited options for exploring the park's interior, resulting in fewer recreational opportunities for this visitor group.

**Winter Trails.** Trails for nonmotorized winter use would remain limited, thereby restricting options for cross-country skiers and snowshoers in areas separated from snowmobilers.

### *Primitive Areas*

**Camping.** Allowing unlimited camping in primitive areas would continue to give users in these areas freedom to camp throughout much of the park. If visitors left evidence of their use, natural conditions could deteriorate, adversely affecting the quality of the experience for other visitors.

## CUMULATIVE IMPACTS

While a no-fee permit system for overnight use would improve the collection of visitor data, information would be inadequate to help the park and surrounding entities to know how best to manage and promote both the park and the area for visitors.

The integrated use of motorized and nonmotorized watercraft on the four major lakes would continue to generate some adverse impacts to visitor experiences, potentially causing recreationists who visit the park by nonmotorized means to seek more primitive areas, such as in Quetico Provincial Park and Boundary Waters Canoe Area Wilderness.

## CONCLUSION

Improved collection of visitor data by means of a no-fee permit system for overnight use would provide quantifiable yet fairly limited visitor use information for making informed park management decisions.

An unlimited number of houseboats would continue to be allowed to moor overnight in park waters, benefiting visitors who participate in this activity. However, the absence of a houseboat quota would not ensure balanced in-water use over the long term, possibly resulting in adverse impacts to the experiences of other park visitors.

Fixed-wing aircraft use would continue on seven interior lakes, providing access to remote areas of the park for a small percentage of visitors. Temporary and localized adverse impacts to natural quiet and feelings of remoteness would occur near interior lakes, although negative impacts would be negligible parkwide.

Continuing the special use zone for special events but no longer permitting radar runs would inconvenience some users.

Developing an estimated 186 additional day and overnight use sites (~400 total), with 40% of the shoreline in a high density area, allowing the continued use of undeveloped sites, and permitting overnight use by large groups would accommodate a range of visitors and more use. However, greater levels of activity, noise, and social encounters could also adversely impact visitor experiences.

Permitting fires at developed and undeveloped day and overnight use sites (in metal fire rings or previously established rock rings) would be convenient for visitors, who would not have to bring campstoves. Allowing the gathering of dead and down firewood would generate localized adverse impacts to the quality of visitor experiences due to environmental degradation over the long term.

Developing only a few destination sites for visitors to participate in interpretive programs would limit opportunities for visitor education related to park resources.

An additional 48.6 miles of trails for nonmotorized use would result in a major benefit for visitors. However, the majority of trails would be on the Kabetogama Peninsula, and trailheads would only be accessible by water. Park guests without boat access would continue to have limited options for exploring the park's interior, resulting in fewer recreational opportunities for these visitors.

No impairment to visitor experience from continuing to implement actions in alternative 1 is expected.

## VISITOR EXPERIENCE — NOISE AND REMOTENESS

### ANALYSIS

#### Motorized Uses

Under alternative 1 there would be no areas on the four major lakes where visitors seeking quiet environments could be assured of noninterference from noise by motorized uses. Not allowing commercial fixed-wing aircraft use on Kabetogama Lake would help retain a quiet atmosphere in the area of the Kabetogama community. Allowing fixed-wing aircraft and motorboats on seven interior lakes and commercial shuttle service to Shoepack Lake, and potentially to Kettle Falls Hotel, would provide access to the remote park interior for a small percentage of park users. This use is intermittent; for example, there are an estimated 60 flights into Shoepack Lake from April through September, or one flight every other day on average. This would result in temporary and localized adverse impacts to the visitor experience in secluded settings for the few backcountry users, but negligible adverse impacts parkwide. Human-made noise and activity could be expected at Kettle Falls; adverse impacts would be negligible.

#### Nonmotorized Uses

Limited opportunities for a quiet and remote visitor experience away from snowmobiles and motorboats would continue. This could produce adverse impacts to visitor experiences, potentially discouraging some persons seeking more wilderness experiences from visiting the park.

#### Visitor Use of Day and Overnight Sites

Building a total of about 400 day and overnight use sites, as proposed in the 1988 *Lakecountry and Backcountry Site Management Plan*, and allowing the use of undeveloped sites would diminish natural quiet and the feeling of remoteness for some visitors. The additional development of four group campsites (with a maximum party size of 72 people each) and one small campground would decrease the feeling of natural quiet and a remote visitor experience for nearby users. Noise and loss of remoteness based on number of sites, density of sites, allowed use of undeveloped sites, and allowed large party size would be greater under this alternative than under the modified proposed action or alternative 2.

### CUMULATIVE IMPACTS

No cumulative impacts were identified.

### CONCLUSION

Continuing to allow motorized uses on seven of the interior lakes and commercial fixed-wing aircraft service to Shoepack Lake, and potentially to Kettle Falls Hotel, would result in temporary and localized adverse impacts to qualities of remoteness and seclusion for a small percentage of visitors, but negligible adverse impacts parkwide. Fixed-wing aircraft use would provide access to some park guests who might not otherwise be able to access interior park areas. Building a total of about 400 day and overnight use sites, allowing large party sizes (72 people maximum), and permitting continued use of undeveloped sites would result in an undetermined level of adverse impacts to the natural quiet and feelings of remoteness.

## VISITOR EXPERIENCE — SAFETY

### ANALYSIS

Opportunities for education related to boating etiquette and safety would continue to be limited, and adverse impacts as a result of conflicts between visitors enjoying motorized and nonmotorized uses would continue.

Unsafe conditions on the Moose Bay portage and Mukooda Lake portage/truck route would continue to make for hazardous snowmobile travel, with localized adverse impacts to the visitor experience.

### CUMULATIVE IMPACTS

No cumulative impacts were identified.

### CONCLUSION

Opportunities for education related to boating etiquette and safety would be limited; conflicts between visitors enjoying motorized and nonmotorized uses would continue. Unsafe conditions on the Moose Bay portage and the Mukooda Lake portage/truck route would continue, making for hazardous snowmobile travel and localized adverse impacts.

## VISITOR EXPERIENCE — CONCESSIONS

### ANALYSIS

Concession operations would continue to provide desirable services for park visitors, and tour boats would provide opportunities for visitors without boats to experience the park.

### CUMULATIVE IMPACTS

No cumulative impacts were identified.

### CONCLUSION

Continuing concession contracts would benefit a broad range of park visitors.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

### ANALYSIS

**Visitor Center Operations**

Visitor assistance and contact with park staff would continue to be limited. Services would continue to be suspended at two of the three visitor centers during shoulder seasons and winter, and the Crane Lake ranger station would be closed or operated sporadically during shoulder seasons and the winter. These seasonal closures would continue to reduce the amount of contact visitors have with interpretive rangers and the potential for visitor assistance and education.

Since the Crane Lake ranger station opened in 1995, volunteers have primarily staffed the facility between May and September. Hours of operation have not been consistent throughout the season. Over the past five years between 1% and 2% of annual park visitors used this facility. Continued operations as at present would prevent some visitors from securing the information and assistance they desired during much of the year. The size of the facility would remain inadequate for assisting visitors or conducting interpretive programs, which would generate adverse impacts to the visitor experience.

**Interpretive Programs, Publications, Projects, and Education**

Visitors would continue to be provided with limited information regarding the park's mission, purpose, and significance. Visitor experience related to experiencing historic trade routes (e.g., the water routes, landforms, vegetation, wildlife that were present during the era of the voyageurs) would be limited.

**Educational Institute**

Not developing a shared educational institute under alternative 1 would minimize opportunities for diverse visitation, education, and interpretive programming.

### CUMULATIVE IMPACTS

The Voyageurs Country-Orr Area Information Center in Orr, a cooperative facility funded by numerous area entities (including the National Park Service, area communities, and others) provides orientation, visitor information, and other services to help acquaint visitors with the park and surrounding areas. Several local chambers of commerce, private museums, and attractions provide interpretive opportunities to the public. In addition, there are numerous rental and guide companies that provide needed information. These activities would be likely to continue.

Orientation, information, programs and educational opportunities at the park's three visitor centers and one ranger station would contribute to regional efforts to disperse tourists into the surrounding communities. This is especially true since few visitor services are available in the park. The National Park Service's contribution to regional and national efforts to expand interpretive, educational, and promotional opportunities would be positive.

### CONCLUSION

During shoulder seasons at Kabetogama Lake and Ash River visitor centers, and during shoulder and winter season at the Crane Lake ranger station, park visitors would not be able to obtain needed information due to limited operations. Inadequate visitor contact with park staff and dissemination of information would limit opportunities for visitor education and understanding of the park's mission, purpose, and significance. No educational institute or similar entity would afford opportunities for visitor education and interpretive programs.

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

### STAFFING

#### Analysis

The National Park Service would continue current operations and proposed management actions without the likelihood of additional staff, resulting in limited visitor programs, limited ability to respond to emergency situations, and less than adequate maintenance and protection of park facilities and resources. Volunteer assistance would become even more critical. Some staff would experience a significant workload increase as management actions were implemented, such as a required no-fee permit for overnight use, additional hiking trails, a revised development plan for Kettle Falls, and other additional facilities and uses. Monitoring and maintaining facilities would create adverse impacts on park operations because of a lack of staff. Overall, safety concerns would increase for visitors and rangers because of a lack of back-up personnel.

The National Park Service would need to station staff at Kettle Falls once a workstation was established. An NPS presence at Kettle Falls would increase visitor services, but it would spread the already limited interpretive staff thinner.

#### Cumulative Impacts

Maintenance and emergency response would continue to be time consuming, with limited park staff. Reliance on out-of-park organizations, particularly for search and rescue, would continue.

#### Conclusion

Developing additional facilities, such as trails, up to about 400 day and overnight use sites, and visitor destinations, as well as implementing a no-fee permit system for overnight use, would result in major increases in responsibilities for current park employees. Without the addition of new park staff, major adverse impacts to park operational workloads would occur. The maintenance and operation of existing and new facilities would require park staff to rely more heavily on volunteer efforts over the long term.

### NPS OPERATIONS AND FACILITIES

#### Analysis

The National Park Service would continue to use two separate facilities for Namakan District maintenance operations, which inhibits a unified program and makes park operations inefficient. Inadequate office and storage space in the Namakan District would continue to create adverse impacts on visitor services and park operations because there is not enough room for staff to efficiently develop and prepare for programs.

NPS operations at Crane Lake would continue to be limited to one seasonal ranger, with few support facilities. This results in reduced visitor services and contact in the area, as well as limited response to emergencies and resource protection.

Plans for an NPS workstation at Kettle Falls would provide work space for employees, which would improve services to the area, allow more visitor contact, facilitate programming, and increase resource protection.

During certain times of year, park housing would continue to be limited. Park employees would have to live outside the park, and some would have to drive longer distances to reach their workstation.

**Cumulative Impacts**

Limited in-park housing would generate minor impacts for seasonal or short-term park employees that would be required to seek rental housing outside the park. However, limited housing in the park would not generate additional maintenance and administration costs.

**Conclusion**

Inadequate work and storage facilities would continue to generate adverse impacts for efficient park operations.

### PARTNERSHIPS

**Analysis**

The National Park Service would continue current partnerships for safety, promotion, maintenance, and natural and cultural resource research. Current relationships for fisheries and wildlife management would continue toward the restoration of natural fisheries and wildlife species. NPS cooperation in and input on adjacent land use activities would facilitate the protection of park resources. The lack of partnerships for campgrounds outside the park would continue to adversely impact those visitors who do not have a boat or who travel only by recreational vehicle or automobile.

**Cumulative Impacts**

The maintenance of only established partnerships would continue favorable cooperative efforts, but it would not build additional quality working relationships between the National Park Service and its neighbors and beyond.

**Conclusion**

Existing partnerships would provide limited opportunities for cooperatively addressing joint management issues and concerns.

## SOCIAL AND ECONOMIC ENVIRONMENT

### ANALYSIS

No impacts are expected from continuing to implement the park's present fire management policy. If natural fire regimes were reestablished, potential impacts on surrounding communities would need to be considered.

The development and construction of additional day and overnight use sites, particularly in the lakecountry, would provide more opportunities for visitors, possibly increasing visitor use and

245

associated expenditures. However, greater site degradation could adversely affect the experience of visitors, leading to reduced visitor use over the long term because visitors might not be able to enjoy a pristine natural area.

There could be minor adverse effects on the local tourist economy because park staffing and materials would not be sufficient to meet the growing and changing demands of visitors and partnering groups.

### CUMULATIVE IMPACTS

Working with community partners toward the goal of developing off-site parking would have a positive impact on relations between the community and the park.

### CONCLUSION

Providing additional day and overnight use sites in the lakecountry would provide more recreational opportunities for visitors, possibly increasing visitor use and associated expenditures in the short term. However, overuse could adversely affect park resources and reduce use over the long term.

Continuing the present course of action would have minor negative economic and social effects on tourism development outside the park because park staffing would be insufficient to meet the growing and changing demands of park visitors and partnering groups. Other economic and social effects would be insignificant.

## UNAVOIDABLE ADVERSE IMPACTS

Unavoidable major impacts to air quality from mobile sources in the park occur, and minor increases in these emissions from increased visitor use over the life of the approved plan are likely. Small areas would be graded, and soil and upland vegetation would be removed to build campsites, day use areas, trails, or expanded facilities at visitor centers. Small amounts of wetland vegetation could be removed through wave action or collisions from watercraft. Oil and gas discharged from motorboats and snowmobiles enter the air and water. Sportfishing at levels beyond those targeted by state fisheries agencies and unnatural water levels and timing would continue to have adverse effects on primary sport fish populations. Wildlife would be disturbed by human activities in the lakecountry and backcountry, including hiking, overnight use, boats on interior lakes, fixed-wing aircraft, motorboats, and snowmobiles. Snowmobile use may affect both gray wolves and bald eagles; both could be additionally affected by trail or other access into breeding or other territories. Closures and patrolling of human activities in critical areas for either would continue to mitigate the impact.

Continuing the present course of action is not expected to negatively affect the overall condition of cultural resources because project-by-project inventories and mitigation would still be conducted. However, without a systematic monitoring program and given the trend of increased party sizes and visitor use at cultural resource sites, there would be a risk of some unavoidable adverse impacts.

Nearly doubling the number of day and overnight developed sites, continuing the use of undeveloped sites, and continuing to allow certain camping facilities for up to 72 people would create situations where visitors would be disturbed, reducing the feeling of remoteness, natural quiet, and the overall quality of the experience. Continuing to allow an unlimited number of houseboats would create negative impacts for some visitors who use smaller or nonmotorized craft. Not providing more trails accessible from the land would preclude hiking opportunities for visitors without access to watercraft. The Ash River and Kabetogama Lake visitor centers and the Crane Lake ranger station would continue to become more crowded. Due to staffing shortages, visitor contact with ranger staff, opportunities for education related to resource protection, and visitor safety would continue to be limited. The unsafe conditions on the Moose Bay snowmobile portage and Mukooda Lake trail would continue to make for hazardous travel for snowmobiles, especially during periods of unsafe ice.

## LOSS IN LONG-TERM AVAILABILITY OR PRODUCTIVITY TO ACHIEVE SHORT-TERM GAIN

As noted above, some soils, vegetation, and wildlife habitat would be permanently removed and unavailable for other purposes to build trails, campsites, campgrounds, or expanded visitor center facilities. Wildlife habitat or vegetation could also be degraded by providing access to otherwise undisturbed areas through the use of undeveloped areas for overnight camping, or by building new developed sites. Wildlife could also be disturbed through the creation of trails and the access they provide. An increase in fishing effort per angler could result in a destabilization in, or reduction of, the populations of some fish species, leaving them more susceptible to changes in abiotic factors such as regulated lake levels.

The continuation of inadequate monitoring and inventory of cultural resources, combined with long-term unlimited visitor use, would likely reduce the relative availability of cultural resource sites for future interpretation and development.

## IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

Irretrievable commitments of resources are those that can be reversed, that is, the commitment of a renewable resource or the short-term commitment of any resource. These include the commitment of air quality by allowing all mobile sources desiring to do so to continue using the park, or the compaction of soils or the trampling of vegetation in undeveloped areas used by overnight visitors. Theoretically, the alteration of upland vegetation through fire suppression and logging before the park was established could be reversed, although constraints imposed by safety and other factors probably make this an irreversible, or permanent, loss for the most part. Erosion of soils is also an irreversible loss, as soils form very slowly in the park. Allowing motorboats and snowmobiles to use the park's large lakes appears to have resulted in irretrievable losses of water quality, overhanging bank habitat, and wildlife habitat for those species sensitive to noise. It may also have contributed to lower than average productivity of some bird species, including colonial nesting birds and bald eagles. Water level fluctuations have led to irretrievable commitments of aquatic vegetation, fish reproductive potential, and aquatic wildlife habitat; these are likely to be somewhat reversed through the adoption of a new International Joint Commission order in 2000 to control lake levels. Possible irreversible impacts to native fisheries or aquatic ecosystems in the park have taken place from stocking or substituting fish species in some of the interior lakes.

Irreversible commitments of resources would include the destruction of nonrenewable cultural resources. Taking appropriate mitigation measures to avoid site destruction or other impacts (including project redesign, hardening sites, or closing selected areas of the park) should avoid any impacts.

## CONSISTENCY WITH NEPA SECTIONS 101 AND 102 (1)

As of January 2001, the National Park Service reemphasized that environmental impact statements should contain a summary of the extent to which each alternative meets sections 101 and 102 (1) of the National Environmental Policy Act. Section 101 asks that agencies use all practicable means and measures to create and maintain "conditions under which man and nature can exist in productive harmony, and fulfill the social, economic and other requirements of present and future generations." Specifically, it asks that the resources of the agencies be used to attempt to do the following:

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations

(2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable or unintended consequences

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources

All of the information needed to respond to these criteria is available in the preceding three summary sections (beginning with "Unavoidable Adverse Impacts"). For instance, the section on long-term productivity and short-term gain explains which resources could be lost to achieve the recreational use of the park if alternative 1 continued to be implemented; this discussion encompasses criteria 1 and 5 above. Criteria 2 and 4 (and to some extent criterion 3) speak to the quality of the environment. Some impacts would be unavoidable, however, as under "Unavoidable Adverse Impacts." Criteria 3 and 6 deal with sustainability and the loss of resources, which are incorporated in the discussion of irreversible or irretrievable commitments of resources.

Section 102 (1) of NEPA asks that agencies administer their own plans, regulations, and laws so that they are consistent with the policies outlined above to the fullest extent possible.

# IMPACTS OF THE MODIFIED PROPOSED ACTION

## NATURAL RESOURCES

### AIR QUALITY

#### Analysis

Impacts to air quality under the modified proposed action would be similar to those for alternative 1 (see page I–204) and would be confined primarily to incidental dust and emissions from motorized equipment used to develop trails, additional campsites, or additional visitor facilities. Emissions would be similar to those from other mobile sources, that is, particulates, carbon monoxide, and oxides of nitrogen and sulfur.

#### Cumulative Impacts

No changes in the cumulative impacts to those described for alternative 1 are expected with the implementation of the modified proposed action.

#### Conclusion

Impacts would be indistinguishable from those described in alternative 1. As in alternative 1, the impact of proposed development on the concentration of large particulates in the park is expected to be negligible. Poor visibility in the winter and atmospheric mercury are increasing at a rate that would result in major adverse impacts to air quality if the trend continued through the life of this plan. However, additional data on visibility are required before a determination can be made if this is a statistically significant trend. Ozone increases over the life of the plan would result in moderate impacts compared to existing conditions. No impairment of the park's air quality resource is expected under the modified proposed action.

### SOILS

#### Analysis

**Impacts Related to Overnight/Day Use Sites.** The modified proposed action calls for the creation of between 280 and 320 lakecountry sites, the implementation and enforcement of specific party size restrictions, and if a feasibility study finds it warranted, the possibility of establishing a permit system for overnight use. Although at-large, leave-no-trace camping in the primitive area would still be allowed, campers would be required to obtain a permit and to keep party sizes to no more than six people. The overnight use of undeveloped lakecountry sites, including the current practice of at-large houseboat mooring, could continue or could be discontinued if an impact monitoring study conducted over three years recommended it.

There would be 80–120 fewer new lakecountry sites than under alternative 1, and between 65 and 105 additional developed sites than under existing conditions. The hardening of developed sites with obvious tent pads could reduce soil compaction and erosion, the uprooting of vegetation, and resulting soil loss, if party size limits were enforced and proper permits were obtained.

Impacts to soils and other resources from overnight camping or day use of sites comes primarily from four sources — (1) physical characteristics of existing sites, (2) campers exceeding the capacity of the site, (3) a lack of knowledge or concern of minimal impact camping practices, and (4) wood-gathering practices (Larsen et al. 1999). Educating visitors about low-impact camping when they obtained permits and enforcing party sizes at developed sites would help keep visitors from walking outside the core areas of newly established sites, reducing the potential for soil loss through trampling and loss of vegetation and subsequent erosion. Encouraging users to bring their own firewood, along with educating them about the park's collection policies, would also reduce the creation of social trails. Compared to alternative 1, these factors could result in minor or moderate localized benefits to soils at developed or undeveloped sites. The benefit to soils parkwide would be negligible or minor.

As noted in the soil impact discussion for alternative 1, the park has a large number of developed lake-country campsites where moderate or severe localized damage to soils has occurred or is ongoing. For the purposes of analysis, this *Final Environmental Impact Statement* assumes the same applies to undeveloped overnight sites. Under the modified proposed action undeveloped sites would be examined through an impact monitoring study, and these sites could be closed to further overnight use if the study results indicated this was warranted. Those considered excessively damaged would not only be closed, but would also be restored to as near natural conditions as possible. The same monitoring study would also examine developed sites to see if any should be restored. Closing undeveloped sites and returning damaged sites to more natural conditions would be a major localized benefit to soils at these sites, compared to alternative 1.

If the impact monitoring study recommended continued use of undeveloped sites, damage attributable to the four factors identified above would continue and would increase at these sites, as described in alternative 1.

If the feasibility study of a reservation/fee system for overnight use resulted in reservations or fees for overnight use, the park could monitor use and party size more effectively, thus ensuring the appropriate size party at each site. Reservations and/or fees would also guarantee contact between visitors and park staff, providing the opportunity to disseminate written information or instructions on low-impact camping practices and park regulations. Money collected from such a program could also fund additional resource protection monitoring or protection efforts, or pay for the restoration of badly damaged sites. The combination of a reservation and fee could result in minor to major localized benefits for soils in the lakeshore area compared to alternative 1, and negligible benefits to soils parkwide.

Restricting party size and requiring groups to obtain a permit to camp in primitive areas would allow park staff to remind campers about low-impact camping. While camping at large would result in the creation of new sites and the loss of organic layers of soil, compaction, and erosion, education and party size limits would minimize this impact. It is likely that new sites would not have more than minor adverse localized impacts, and that damage at existing sites would not increase beyond what it is now. The modified proposed action would therefore have a negligible to minor benefit compared to alternative 1, and a possible localized minor adverse impact compared to existing soil conditions at backcountry sites. These impacts would be negligible on a parkwide basis.

**Impacts Related to Other Development.** The modified proposed action includes the development of visitor destination sites and minimal increased development and site disturbance at existing visitor centers and Kettle Falls. Minimizing disturbance of soils, particularly on steep slopes, such as those at the Ash River and Rainy Lake visitor centers, would also minimize impacts from compaction and erosion. This is a potential minor to moderate localized beneficial impact compared to alternative 1.

250

The development of 48.6 miles of summer trail and an additional 5.8 miles of winter trail (total 54.4 miles or 88 km), including the Kabetogama–Ash River trail, is proposed as part of this alternative. About 33 miles of new trails would disturb soils, and 15 of these 33 miles would be outside the park. A portion of the winter trail (5 miles) would be on the frozen surface of Kabetogama Lake and would not disturb soils or vegetation. Of the 54.4 miles of total trails proposed, and assuming 50% of trails located on land would require grading, about 12 acres of soils would be graded. This is comparable to alternative 1, but the location and type of soils affected would differ. The Kabetogama–Ash River trail would result in the removal of about 16 acres (6.5 ha) of soil (about 7 acres outside the park) and would traverse wetlands, including deep marsh and lowland forest types of wetlands, which are often characterized by fine-grained silts and clays. Although building a trail through these wetlands would have only a minor adverse impact on the soils themselves, the characteristics of these soils, including poor drainage and the tendency to shrink when dry and swell when wet, might make the creation and maintenance of such a trail challenging. An extension from Ash River to the Crane Lake area to connect existing trails would also be studied.

### Cumulative Impacts

Cumulative impacts to soils would be the same as those identified in alternative 1 (see page I–208).

### Conclusion

Impact monitoring would be done at undeveloped and developed sites to determine whether overnight use of undeveloped sites should stop, and which sites are excessively damaged and in need of restoration. If the monitoring study recommended continued overnight use at undeveloped sites, impacts to soils would be similar to that in alternative 1. However, if the study recommended stopping overnight use at undeveloped sites and restoring these sites, these actions could have major localized benefits for lakeshore soils, and negligible benefits for soils parkwide. If overnight reservations and/or fees were determined feasible and appropriate, there could be minor to major localized benefits on lakecountry soils as a result of park staff contacting and educating visitors, as well as a possible source of revenue to continue monitoring and restoring soils at damaged sites. Educating campers about low-impact camping when they obtained a permit, and enforcing party size limits for permits in primitive areas, could have negligible to moderate localized beneficial impacts on soils relative to alternative 1. Minimizing the expansion of visitor center facilities would have a minor to moderate localized benefit to soils. Building a total of 54.4 miles of trails, including a 33-mile segment of the Kabetogama–Ash River trail, would disturb about 12 acres of soil in the park, an indistinguishable change from alternative 1. However, the type of soil affected would be different, and its physical characteristics could impose trail building or maintenance restrictions. No impairment of soils from implementing this alternative is anticipated.

## VEGETATION

### Analysis

**Impacts Related to Fire Management Policies.** Under the modified proposed action the park would revise its fire and vegetation management policies to support a broader range of resource management objectives, including restoring fire in all park ecosystems as a natural ecological process. Constraints such as safety, property protection, and visitor experience would continue to influence how this policy was carried out, although the park would also act to shorten the time for forest communities to reattain their natural ecological characteristics and processes. The park would also consider managing vegetation to contribute to visitor use and enjoyment. Management to implement these policies has yet to be determined, but could include seeding, planting, and other intervention to help communities (including wetlands, pine forests, and mixed woods) to flourish in presettlement abundance.

With an aggressive combination of prescribed fire and planting or seeding of jack, red, and white pines, park staff estimate natural burning cycles could be reestablished to restore 10%–15% of jack, white, and red pine and mixed-wood forests to approximate presettlement (pre-1880) conditions. This would be a moderate benefit to these communities compared to existing conditions; however, it might be a much larger benefit compared to gains achieved in alternative 1 (e.g., a 15% increase in pine forests is 50% greater than the 10% increased achieved by fire in alternative 1). The use of fire would also improve conditions in approximately 5%–10% of park wetlands. This benefit is comparable to alternative 1.

**Impacts Related to Overnight/Day Use Sites.** Impacts to vegetation would be similar to those described above for soils.

If the feasibility study recommended that the park should require reservations and/or charge fees for overnight use, it would provide an opportunity for contact between visitors and park staff, ensuring the proper size party at each site and preventing the overuse of fragile or damaged sites. With the results of the impact monitoring study, park staff could also ensure that visitors would not occupy sites where wetland or rare vegetation exists. Educating visitors when they made reservations about low-impact camping practices, park regulations, or sources of nearby firewood would reduce impacts to vegetation caused by social trails or chopping firewood. Enforcing party size limits would keep visitors from creating new tent pads, or enlarging the core. Revenues from fees, if the feasibility study recommended that they should be charged, could also result in benefits if they were used to restore damaged sites or otherwise mitigate impacts to vegetation. Adding a reservation and fee system therefore could result in moderate to major localized benefits to vegetation.

As described above, the modified proposed action also calls for an impact monitoring study to determine whether overnight use of undeveloped sites, including the practice of at-large houseboat mooring in the park, should be stopped. Undeveloped sites are not subject to resource protection criteria described in the *Lakecountry and Backcountry Site Management Plan* for developed sites, and visitors could select areas where vegetation is particularly fragile or unique, including where marsh or other aquatic shoreline vegetation grows. Although the impacts have not been studied, this analysis assumes vegetation impacts are at least similar in magnitude, if not more severe, than those found at developed sites (see Larsen et al. 1999 for more information on impacts in developed sites). Given this assumption, existing severe impacts on 35–55% of the 680 or so sites could remain if overnight use at undeveloped areas continued, especially if a reservation system was not implemented. Additional sites are likely to be created, or existing sites expanded, resulting in a larger percentage of sites with severe damage or more sites overall. Impacts would be similar to alternative 1 and could be widespread enough to approach the moderate level parkwide or major in the lakeshore management area.

This alternative also calls for the evaluation of conditions at all sites, including undeveloped ones. If the study found that all undeveloped sites should be closed to overnight camping and at-large houseboat mooring, existing impacts to vegetation at undeveloped sites would not increase, although they would continue at present levels unless the sites were restored. Restoring excessively damaged sites to as near natural conditions as possible could result in moderate to major localized benefits to vegetation compared to alternative 1, and a negligible parkwide benefit.

A minor localized and negligible parkwide benefit to backcountry vegetation could result from educating campers in primitive areas about low-impact camping when they obtained permits.

252

Because the majority of human-caused fires in the park are a result of overnight use at undeveloped sites, closing these sites to overnight use could also result in a negligible to minor benefit to park vegetation.

**Impacts Related to Other Proposed Development.** Minor impacts to upland vegetation from developing visitor destination sites and from increasing development at existing visitor centers, as described above for soils, would occur under this alternative. Because development at visitor centers would be minimized, it is a relative benefit to vegetation compared to alternative 1.

The modified proposed action includes the development of a Kabetogama–Ash River trail, with a possible extension to the Crane Lake area. The development of trails adjacent to or across wetlands could result in the removal of wetland vegetation and increased sediments to the area as a result of erosion or trail construction. These impacts are expected to be short-term and would diminish over time as vegetation alongside the trail recovered.

Preliminary routing of the Kabetogama–Ash River trail indicates wetlands would be avoided wherever possible, but small portions of lowland forest (black ash or black spruce, white cedar swamp, speckled alder swamp) or wetland (pondweed, wet meadow/fen mosaic) would be removed. Small sections of unique vegetative associations, such as white cedar/yellow birch forest might also need to be removed. The amount of each vegetation type removed would be small enough that parkwide impacts would be negligible. The trail would cross a deep marsh section of Daley Bay by means of a floating bridge, boardwalks, and an arch for canoes to pass under. The construction of the trail and these structures could lead to sedimentation into the wetland area of the bay, resulting in long-term physical damage to plants through trampling by workers and construction equipment. The park has over 3,000 acres of deep marsh; the construction of the trail could result in damage to or removal of a small portion of marsh if rerouting was not possible. Although removal or damage could be a major localized impact to deep marsh vegetation in the area of Daley Bay, it would be a negligible or minor adverse impact to this vegetation type in the park.

Developing separate launch areas at visitor centers for nonmotorized users might uproot or trample small amounts of wetland plants because of repeated use. Launch areas would likely remain devoid of plant life due to erosion and the compaction of bottom sediments. Erosion from developed launch sites could increase turbidity and sedimentation into adjacent areas. The impacts to aquatic vegetation would be negligible or minor on a parkwide basis.

**Impacts Related to Recreational Use.** Only interim limits on the number of houseboats are proposed in this alternative. The boats-on-interior-lakes program would continue, but the park would require user fees. Since visitors must now obtain a key to unlock the boats, the difference in impact on aquatic vegetation from nonmotorized use because of education by park staff would be indistinguishable, if present at all. Therefore the potential for damage from physical collisions, uprooting, or boat launching from nonmotorized use would remain the same in this alternative as alternative 1 for shoreline vegetation on small interior lakes.

The modified proposed action would result in the development of brochures and outreach programs focusing on boat etiquette relative to different user groups. If information about sensitive plant types, including aquatic or shoreline vegetation was included, these brochures could result in benefits on wetland vegetation on the park's large lakes. Physical damage or increased turbidity from propellers, or erosion of roots or banks from wave action, particularly in shallow water, could decrease if the boating public read and followed the advice in the brochures. The extent of such benefits is unknown, but would likely be negligible.

**Impacts Related to Visitor Education, Interpretation, and Services.** This alternative would result in the expansion of interpretive programs that would focus on critical resource issues. Through the use of programs and educational materials the public could be made aware of the importance of unique or fragile vegetation, with resulting negligible or minor benefits.

### Cumulative Impacts

Staffing increases for resource protection might result in increased detection and removal of purple loosestrife and other exotic plants, possibly resulting in no increases or even some reductions of infestations over existing conditions. Additional staff effort would be expended to prevent infestations of Eurasian watermilfoil or other exotic species that have not yet entered the park. The park would use increased resources to create a vegetation management plan, which would include a strategy and specific tools to use in combating exotics. The benefits could range from negligible to major for the park's native plant species.

Other than this, no change in cumulative impacts to vegetation beyond those described for alternative 1 are expected.

### Conclusion

Changing the focus of fire management to support a broader range of resource management objectives could have moderate to major localized benefits to native vegetative communities compared to alternative 1, in particular pine and mixed-wood forests. If an overnight permit system was determined feasible and appropriate, such a system could provide moderate to major benefits to vegetation in the lakecountry through education, control of party size and camping location, and revenues for restoring or mitigating impacts to vegetation. Requiring permits for primitive area campers could have a minor localized benefit and negligible parkwide benefit to vegetation in the backcountry. If an impact monitoring study recommended that overnight use at undeveloped sites be stopped, restoring excessively damaged sites would result in moderate to major localized benefits to lakecountry vegetation. If overnight use at undeveloped sites continued, impacts to vegetation would be similar to alternative 1, possibly reaching moderate levels on a parkwide basis. Minimizing expansion of visitor center facilities would have a minor to moderate localized benefit to vegetation.

Impacts to aquatic vegetation from at-large houseboat mooring, boat propellers, and wave erosion would be the same as alternative 1, except that information in brochures handed out to boaters could have negligible benefits. Impacts to some types of wetland vegetation from completing the Kabetogama–Ash River trail or building boat launches would occur. For the most part, these would be minimal; however spanning the deep marsh at Daley Bay could result in major, long-term, localized impacts to vegetation at that site. Because only a small percentage of the park's deep marsh vegetation would be affected, the parkwide impact of building this trail would be minor. Increased funding and staffing could result in negligible to major benefits to native plants from early detection and elimination of exotics. No impairment to the park's aquatic or terrestrial vegetation resource compared to existing conditions is anticipated from implementing the modified proposed action.

## WATER QUALITY AND WATER RESOURCES

### Analysis

**Impacts Related to Overnight/Day Use.** Impacts from the use of undeveloped sites by overnight tent campers, houseboaters, or day use visitors, if it continued, would have similar, negligible parkwide impacts to biological oxygen demand, bacteria, and nutrient loading, as described for alternative 1 (see page I–214).

**Impacts Related to Development.** Although the number of developed sites would be slightly less than under alternative 1, the impacts to water quality from increased turbidity resulting from erosion would be indistinguishable unless tent or houseboat campers were only allowed to use developed sites. If the monitoring study found at-large camping in the lakeshore management area to be unacceptable, some negligible benefit compared to alternative 1 could result.

**Impacts Related to Houseboat Graywater.** Impacts from houseboat use would be the same as alternative 1 for at least the next 4–5 years. During this period the park would study houseboat use and its impacts in order to determine whether to require graywater holding tanks and/or permanently limit the number of houseboats allowed to stay overnight in the park. If the resulting houseboat management plan required the containment of graywater, from 216,000 to 288,000 fewer gallons (830,000 to 1.1 million liters) of graywater would be released in the lakes of the Namakan basin, and from 228,000 to 304,000 gallons (877,000 to 1.17 million liters) in Rainy Lake. This would be a minor to moderate localized, and negligible parkwide, benefit to water quality.

**Impacts Related to Recreational Use.** Impacts from private motorized boat use on the park's four large lakes would be the same as alternative 1. However, additional negligible amounts of fuel and/or PAHs would be added to lakes where water taxi service, boat rentals, or additional tour boat service occurred.

### Cumulative Impacts

As described for alternative 1 (see page I–217), additive impacts to lake water quality from snowmobiling, oil, grease and other substances washed into the lakes from roads and parking lots, as well as septic releases, would continue to occur under the modified proposed action.

The modified proposed action could result in increased staffing, including additional resource protection personnel. Park policies for fish and wildlife management would be strengthened to partner with state and other governmental entities and private parties involved in the management of the border waters. An aquatic biologist is slated for hiring if funds increase. If this person monitored the impacts of changes in lake levels called for in the International Joint Commission's 2000 order, as described under alternative 1, evidence of the benefit of these changes on the park's hydrology and/or aquatic ecosystems could be provided. This evidence could, given a partnership with border water managers, eventually lead to the consideration of additional changes, which could in turn have minor to major beneficial impacts on park water resources compared to alternative 1.

### Conclusion

Impacts to water quality from graywater releases would be the same as in alternative 1. If the proposed houseboat management plan required graywater to be contained, minor to moderate localized, and negligible parkwide, benefits to water quality could result. Impacts from motorized use, including contamination from oil and grease and PAHs, would be nearly the same as described for alternative 1 (that is, moderate to major parkwide impacts to water quality). Increased water taxi service, boat rentals, and tour boat services on the park's four large lakes would result in a negligible addition of fuel or PAHs compared to alternative 1. Additional benefits to park hydrology could result under this alternative through monitoring and forming a partnership with entities charged with the management of border waters. No impairment is anticipated of park water quality resources from implementing actions in this alternative.

257

## FISHERIES

### Analysis

**Impacts Related to Parkwide Management Policies.** Under the modified proposed action the National Park Service would work more closely with the Minnesota Department of Natural Resources and the Ontario Ministry of Natural Resources to develop cooperative and unified approaches to fisheries management. Rather than managing park lakes to focus primarily on sportfishing, as has been the MDNR policy until recently, the agencies would cooperate to restore natural fisheries and reestablish native fish and wildlife species.

The National Park Service would work with both the Minnesota Department of Natural Resources and the Ontario Ministry of Natural Resources to develop a cooperative fisheries management plan that would focus more closely on maintaining healthy native fish populations and aim towards more sustainable yields. This cooperative effort could also monitor the effects of changes in lake levels by documenting whether lake level changes improve spawning habitat for key species. The extent of benefits to natural fisheries and native fish species from these cooperative efforts is unknown, and could range from a negligible to a major positive effect.

**Impacts Related to Recreational Use.** Motorized use levels would be similar to alternative 1, with the exception of increased water taxi and boat rental service. This change is not expected to have more than negligible impacts on fish. As noted in the impacts for alternative 1, no impacts from motorboat noise are expected, based on limited studies of sunfish. Pollution levels from discharged fuel or PAHs would be virtually the same as alternative 1.

### Cumulative Impacts

Cumulative impacts to fisheries would be the same as those described for alternative 1 (see page I–221).

### Conclusion

Impacts from sportfishing, managed lake levels, and pollution would have the same minor adverse effects as described in alternative 1, with the potential for moderate to major impacts if current mitigation failed. Under the modified proposed action cooperative efforts with other agency managers and an emphasis on reestablishing natural, self-sustaining populations of native species could benefit the park's native fisheries, but the degree of benefit is unknown and could range from a negligible to a major positive impact. As in alternative 1, no impairment to park fisheries is anticipated from implementing the modified proposed action.

## WILDLIFE

### Analysis

**Impacts Related to Park Management Policies.** The National Park Service would strive to work more closely with the Minnesota Department of Natural Resources and others to develop ecosystem approaches to wildlife management under this alternative. The park's *Wildland Fire Management Plan* would also be revised, as noted above under "Vegetation," to support broader objectives, including reestablishing fire in forests as a natural ecological process. Additional staff to help monitor and manage wildlife would also be part of this alternative. Combined, these actions would likely result in some small increase in the number of recently burned, open areas in the forest canopy. This would

256

favor species such as moose, deer, and a variety of amphibians, reptiles, birds, and mammals that require shrubby habitat for feeding or nesting, including robins, crows, yellow warblers, common garter snake and meadow voles (Heinselman 1996; Green 1995). Vegetation would be managed to produce a park ecosystem as it would have evolved prior to the settlement period and perpetuate ongoing natural processes. Such a strategy would result in changes in habitat favoring native wildlife, and in particular wildlife requiring canopy openings or shrubby areas, such as deer, snowshoe hare, moose, beaver, red fox, tree swallows, kingbirds, and many others.

**Impacts Related to Overnight/Day Use.** If camping at undeveloped sites continued, impacts associated with human intrusion into otherwise relatively undisturbed habitat would continue at a level comparable to alternative 1. Impacts on wildlife would include energy loss, habitat or nest abandonment for short periods of time or permanently, and possible reduction in adult survival. Mooring, camping, and day use of undeveloped areas would also continue to result in vegetation trampling, in some cases of important habitat for aquatic wildlife, including amphibians, waterbirds, and mammals, since sites in undeveloped areas are not subject to the same criteria as those developed by the park. Eliminating the overnight use of undeveloped areas could have minor to major benefits for lakecountry wildlife compared to alternative 1.

If an overnight reservation/fee system was found to be feasible and appropriate, wildlife could benefit from the practices described above under the soils and vegetation sections. These include education about low-impact camping practices and park rules and regulations. Revenues might also be used to enhance wildlife habitat elsewhere in the park, or to restore sites in undeveloped areas if they are closed and designated for restoration (as a result of the impact monitoring study). The combined effect could be a minor to moderate positive impact on wildlife in the lakecountry.

The creation and use of developed sites would favor some wildlife species and adversely affect others, as described for alternative 1 (see page I–224). Conflicts with black bears would probably increase over existing conditions, although because fewer new campsites are planned, fewer conflicts and a relative minor to moderate benefit compared to alternative 1 is likely. Although wildlife sensitive to human disturbance would benefit from a lower density of developed sites, this benefit would be offset by the adverse impact of spacing these campsites out to meet privacy goals. Human activity would not be absent for any long stretches of lakeshore in the lakecountry, possibly causing some species, such as minx, loons, and a variety of ground or shrub dwelling species, to abandon the area. Therefore, impacts would be similar to alternative 1 (a minor to moderate adverse impact to wildlife along the entire shoreline of the park's large lakes).

The modified proposed action includes the creation of 15–20 visitor destination day use sites. These destination sites would be created to view or experience a particular cultural or natural resource. The actions taken to create them, and particularly the possible disturbance from visitors using them, could have a negligible to moderate localized impact on wildlife. This impact is unlikely to be more than negligible on a parkwide basis.

**Impacts Related to Proposed Development.** Compared to alternative 1 this alternative would have less development at visitor centers, fewer campsites, and similar trail mileage. This could result in negligible benefits to wildlife from fewer acres of habitat removal, and less access into wildlife territory that is otherwise relatively undisturbed. The creation and use of the Kabetogama–Ash River trail could result in the removal of some small portions of relatively prime habitat for wildlife, including some of a deepwater marsh in Daley Bay. Species such as painted turtles, snapping turtles, several species of frogs, wetland or waterbirds, and muskrat or beaver could be affected by the removal of wetland vegetation. Effects to individual animals or those unable to find similar habitat would be severe, but effects to wildlife would likely be negligible parkwide, and wildlife resources along the trail route would remain unimpaired. Noise during construction would disturb some wildlife, which would temporarily avoid the area. Some wildlife might also be attracted to the trail as a travel corridor, particularly during winter. In addition, at least one osprey nest is located near the proposed trail route. Parkwide, impacts to wildlife from construction of trails are expected to be negligible or minor.

**Impacts Related to Recreational Use.** Distributing information to boaters, along with educating campers and houseboaters seeking permits about how to avoid creating impacts, could reduce effects on wildlife. If visitors voluntarily avoided sensitive wildlife areas (such as shoreline vegetation, back bays, and nesting areas) and reduced speed and noise levels, there could be minor to major localized and negligible to minor parkwide benefits for wildlife in the lakecountry.

### Cumulative Impacts

Cumulative impacts would be similar to those described for alternative 1 (see page I–225) and would occur from habitat loss in adjacent forests and wetlands, human disturbance from vehicles or recreational activities, pollutants including mercury, and water level fluctuations.

### Conclusion

Reestablishing fire as a natural ecosystem process to the extent possible would result in minor benefits to native species that require recently disturbed or open areas, including canopy openings in mature forests.

If overnight use at undeveloped areas in the lakecountry continued, impacts to wildlife would be the same as those described in alternative 1. Stopping use at these sites would mean less human disturbance in otherwise relatively undisturbed wildlife habitat, resulting in minor to major localized benefits to wildlife. The benefits to wildlife of a lower density of developed sites would likely be offset by spacing them to achieve privacy goals, resulting in a net minor to moderate impact to lakecountry wildlife compared to existing conditions, and similar impacts compared to alternative 1. If an overnight permit system was determined feasible and appropriate, minor to moderate benefits for lakecountry wildlife could result from education and generating revenues for site restoration and wildlife management. The creation and use of 15–20 visitor destination day use sites could result in negligible to moderate impacts to wildlife at those sites.

Development, including the Kabetogama–Ash River trail, would result in the removal of habitat and the displacement of wildlife. Noise during construction and human use of the trail could temporarily disturb and displace wildlife. If animals were occupying unique habitat, such as some of the wetland types the trail would necessarily traverse, impacts to individual animals or family groups could be severe. However, impacts to wildlife parkwide would be negligible or minor, and the wildlife resource along the trail route would remain unimpaired.

If visitors in motorized craft voluntarily reduced speed or noise, or avoided areas where nesting birds or other sensitive wildlife reside, as a result of information in park brochures, there could be minor to major positive impacts on these local populations, and a negligible to minor benefit to wildlife parkwide.

No impairment of the park's wildlife resources is anticipated under this alternative.

## SPECIES OF SPECIAL CONCERN

### Analysis

**Bald Eagles.** *Impacts Related to Park Management Policies* — Park management policies would remain the same as described for alternative 1 (see page I–227).

*Impacts Related to Overnight/Day Use* — The use of undeveloped areas could increase under the modified proposed action (if the monitoring study recommended continued use of undeveloped areas), and human disturbance could increase near the edges of buffers set up by park staff. Visitors could also be tempted to cross boundaries and view nesting eagles if they were camping nearby. Because eagles are particularly sensitive to humans on foot, minor impacts could occur relative to alternative 1 if overnight use of undeveloped sites continued. The park establishes 400-meter zones around eagle nests, offering some protection. However, some research indicates a buffer of 800 meters to 1,200 meters might be required to prevent impact if there was a direct line of sight from the nest to the disturbance, e.g., a campsite (Grier et al. 1983; Grubb et al. 1992).

It is possible that the modified proposed action, since it would emphasize spacing sites to meet privacy goals laid out in the *Lakecountry and Backcountry Site Management Plan*, would result in greater disturbance to eagles, and humans would occupy spots along most of the shoreline. In other words, human activity would not be absent from any long stretches of shoreline, but would be consistently placed at defined intervals. This could limit the use of nest, perch, and foraging habitat. Clustering or setting sites back and away from the shoreline would mitigate this increased impact (Peterson 1986).

*Impacts Related to Other Development* — The use of the winter portion of the Kabetogama–Ash River trail along the shoreline of Kabetogama Lake could affect nesting eagles in late February through the end of the cross-country ski season. However, the effects are not expected to be more than negligible or minor, as no active nests exist adjacent to the proposed trail alignment.

*Impacts Related to Recreational Use* — Impacts from snowmobiles flushing eagles from their nests, or passive displacement of eagles from their foraging territories as described for alternative 1 (see discussion beginning on page I–227), would continue under the modified proposed action as well.

**Gray Wolf.** *Impacts Related to Park Management Policies* — Park management policies and related impacts would be the same as alternative 1 (see page I–228).

*Impacts Related to Overnight/Day Use Sites.* As noted, wolves can tolerate development fairly well. Even with fewer developed sites under this alternative, there are no detectable differences in impact compared to alternative 1.

*Impacts Related to Other Development.* The major difference between this alternative and alternative 1 is the possibility of impact from the construction and use of the Kabetogama–Ash River trail. Like other wildlife, wolves vary in their response to human disturbance. Some readily abandon dens or rendezvous sites following disturbance (Theberge 1998). Others continue to den within close proximity to human disturbance, and use trails and roads for travel during both summer and winter (Fuller 1997, Thiel et al. 1998). Daley Bay, which the trail would cross, was one of 11 bays closed to public use in the 1999–2000 winter to protect hunting and foraging areas for wolves and other wildlife. This suggests wolves in the park, and primarily the Nebraska Bay pack which occupies a territory including the route of the proposed trail, would suffer some effects, although the bulk of evidence suggests that a proposed nonmotorized trail would not cause the pack to abandon its territory.

259

The trail could have limited adverse effects on park wolves by providing corridors for dispersing competitors, including coyotes and wolves from other packs. This could result in inter- and intraspecific strife (mortal fights), hybridization (Lehman et al. 1991), and the spread of diseases (Brand et al. 1995). It could also provide additional human access into wolf territory. As noted in chapter 3 and the impact discussion for alternative 1, human-caused mortality associated with increased access is the primary factor in wolf population declines. Assuming adequate ranger patrolling of the trail to ensure skiers did not disturb wolves, the impact would be negligible or minor.

**Canada Lynx.** *Impacts Related to Park Management Policies* — No differences between policies described for alternative 1 (see page I–229) and this alternative are expected.

*Impacts Related to Overnight/Day Use* — No differences between policies described for alternative 1 and this alternative are expected.

*Impacts Related to Other Development* — This alternative would result in the development of up to 54.4 miles (88 km) of trails and paths, including the Kabetogama–Ash River trail. Portions of these trails would be located in the type of habitat used by lynx for cover and denning. If a population exists in the park, the use of these trails could disturb lynx. In addition, the skiing portion of the Kabetogama–Ash River trail would provide a path relatively free of deep snow. This could favor competitive species, such as bobcat or coyote, who are unable to access lynx habitat under normal winter conditions, resulting in decreased availability of prey and/or reproductive success for lynx. The degree of impact relative to alternative 1 is unknown and could be negligible to major.

**Floating Marsh Marigold.** No impacts from any of the actions proposed in this alternative are expected to affect the floating marsh marigold.

**Lapland Buttercup.** This species grows in the vicinity of Daley Bay. The Kabetogama–Ash River trail would be routed around the known population of this species. Any additional populations of this or any other rare plant species found during trail construction would be noted and the trail rerouted to avoid them (NPS 2000c).

**Northern Bog Lemming.** If this species is present in the park, it would occupy wetland habitat and an individual or family may be disturbed or displaced by the Kabetogama–Ash River trail. Site-specific surveys would be conducted before the trail was constructed to identify and avoid habitat used by this and any other protected species.

**Snapping Turtle.** Snapping turtles could be affected by the removal of small amounts of wetland vegetation, particularly in the deepwater marsh in Daley Bay, to create a floating bridge or boardwalk for the Kabetogama–Ash River trail. Effects to individual animals or those unable to find similar habitat would be severe, but effects to snapping turtles would be negligible parkwide

**White Pelican.** No impacts from any of the actions proposed in this alternative are expected to affect the white pelican.

### Cumulative Impacts

Cumulative impacts for bald eagles would be the same as those described for alternative 1 and include habitat loss, human disturbance and harassment, contamination through pesticides and other substances, water level fluctuations, and natural factors (see page I–230). The synergistic effect of these factors has already resulted in lower than average reproductive success, a moderate impact on the park's eagles.

Wolves have experienced impacts from habitat loss, human disturbance, direct human mortality and natural causes.

Timber management, site development, and road and trail construction are actions that favor competitors, and scientists believe the cumulative impacts have adversely affected Canada lynx.

### Conclusion

The modified proposed action is not likely to adversely affect federally listed, candidate, or proposed threatened or endangered species as the term "adversely affect" is defined in the regulations implementing the Endangered Species Act. The National Park Service has received concurrence on this determination from the Twin Cities Field Office of the U.S. Fish and Wildlife Service. However, if new information becomes available that shows federal candidate, proposed, or listed threatened or endangered species could be affected, consultation with the Fish and Wildlife Service will be immediately initiated.

As described for alternative 1, cumulative impacts to bald eagles appear to have had moderate adverse effects on relative productivity, but productivity appears to be improving. Sources of impact are the same as those described in alternative 1 and include the use of snowmobiles in early spring, boat traffic, toxins, and the effect of water levels and other factors on fish, the eagles' primary source of food.

While wolves as a species have experienced major impacts, those in Minnesota and in the park appear to be faring well. Wolf densities in the park are comparable to those in similar habitats, and impacts from providing snowmobile access into habitat on the Kabetogama Peninsula appear to be offset by closures on Kabetogama Lake. Creating the Kabetogama–Ash River trail would have negligible or minor impacts on wolves using the area around Daley Bay. These impacts would not occur from human disturbance, but from providing travel corridors for humans and wildlife, resulting in possible inter-specific or intra-specific competition between coyotes, or between wolves in different packs.

The Kabetogama–Ash River trail could provide access by coyotes and bobcats into territory otherwise occupied by lynx. These species are competitors with lynx, and coyotes prey on them as well. If lynx exist in the park, the trail could have an unknown adverse impact on them for these reasons.

Negligible to major localized and negligible parkwide impacts to snapping turtles and the northern bog lemming from building the Kabetogama–Ash River trail could occur.

No impairment to bald eagles, wolves, lynx, or other protected species is anticipated from implementing the actions in the modified proposed action.

## CULTURAL RESOURCES

### ARCHEOLOGICAL RESOURCES

### Analysis

Under this alternative, the number of developed sites would be reduced to a total of 280–320. Many of these sites would be located in areas that have already been archaeologically investigated. While the development of new visitor destinations would result in an increase in visitor use, the park's interpretive and educational programs would also increase visitor appreciation and understanding of park resources and the importance of their preservation. Additionally, regular patrols on cultural resources would occur with specific protection goals.

261

While visitor use of undeveloped areas could continue, similar to alternative 1, the implementation of a monitoring study and a permit system for primitive area camping would be beneficial as it would enable the park to better monitor and assess visitor use impacts. A public education program to encourage use of developed sites would likely reduce some impacts by helping to raise visitor awareness of the potential impacts of their use. A permit system and monitoring of visitors at both developed and undeveloped areas would likely reduce the level of visitor impacts as compared to unlimited use under alternative 1.

#### Cumulative Impacts

As with alternative 1, given the park's mandatory compliance with federal legislation, there is not a potential for major impacts resulting from development-related activities. While similar localized impacts resulting from visitor use are expected, the reduction of visitation levels in selected areas would be expected to reduce the overall number of localized impacts.

#### Conclusion

The limited park identification and evaluation program would result in only negligible to minor impacts parkwide, similar to alternative 1. An overall reduction in the number of sites developed and in visitation levels in selected areas would be beneficial. While the types of localized impacts would be similar to alternative 1, the overall frequency would likely be reduced. Implementing a monitoring program for undeveloped areas combined with a public education program to encourage use at developed sites would also be beneficial in both proactively reducing the potential for impacts to archeological resources at undeveloped sites and for detecting early signs of visitor-related impacts. No impairment to archeological resources is anticipated from implementing the modified proposed action.

### HISTORIC STRUCTURES

#### Analysis

Under this alternative proposed revisions to the 1990 *Historic Structures Management Plan* would include determining preservation treatments based on criteria such as significance, integrity, condition, public interest, interpretive potential, potential for reuse or continued use or other appropriate factors. This approach would result in the preservation of an estimated 16–20 properties with multiple structures. The management of these properties would focus on working with others to highlight the connections between the park's cultural resources and those in the local, regional, and state area, with specific decisions on properties based on information that would be developed in subsequent implementation plans. The park would implement a comprehensive preventive maintenance program to help preserve historic structures as well as establish a monitoring system to understand visitor use patterns and resource impacts. This alternative would result in a more focused approach to historic structure management as a result of preventive maintenance and monitoring programs. As with alternative 1, there would be an adverse effect to the limited number of properties with potentially eligible structures chosen for removal, though it is unknown at this time how many structures would be removed or retained. All properties awaiting treatment decisions would be stabilized and protected pending decisions on treatment and funding for implementation.

The park would also explore alternative solutions for using historic structures, including park operational uses (e.g., expanding ranger operations and interpretations into the Kabetogama Ranger Station Historic District and reusing historic cabins as staff/ranger housing when appropriate) and a broader range of interpretive and research functions. Staffing would be increased as funding allowed, with an emphasis on resource preservation and visitor services personnel. While this direction in management would be beneficial overall, as with alternative 1 there would still be a potential for moderate localized impacts to structures, depending on individual rehabilitation plans. Preservation and rehabilitation treatments, however, would be performed in accordance with the "Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings" (NPS 1995c).

Public/private partnerships between the National Park Service and other organizations would be pursued for the management of historic properties and could include preservation and management of a site by a private or non-NPS agency. Given that compliance with federal legislation would require some restrictions on their use to maintain their character, this would result in negligible to minor impacts parkwide.

Access to previously recorded cultural resource sites would be limited. Additionally, a broad range of cultural resource sites would be developed to inform visitors about the history of the park and the region. The development of sites would be determined based on a site's ability to withstand use, the cultural theme it represents, and its connection to compelling interpretive stories. The appropriate level of development and access would be commensurate with the goals of the management area in which the site is located. Limitations on visitor access to sensitive cultural resource sites would be beneficial for all resources parkwide, as would new opportunities for public interpretation.

### Cumulative Impacts

Adaptive use of structures through their preservation or rehabilitation for contemporary uses would be done in keeping with the "Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings." The removal of historic structures would be an adverse effect. The identification of properties to be removed would take place in the process of revising the *Historic Structures Management Plan,* in consultation with the Minnesota State Historic Preservation Office. Such consultation would be done in accordance with section 106 of the National Historic Preservation Act, as amended, and the Advisory Council on Historic Preservation guidelines set forth in 36 CFR 800. In addition to other items, mitigation options would consider the expeditious removal of these structures. It also will address the issue of stabilizing the retained properties as an interim treatment prior to the implementation of more comprehensive preservation treatments.

### Conclusion

Similar to alternative 1, retaining and preserving 16–20 identified properties, along with protecting ruins, would be beneficial; however, there would be major localized impacts on a limited number of properties where potentially eligible structures would be removed. With appropriate mitigation, this removal of selected structures would have minor impacts parkwide. Alternative solutions to structure management and use would be beneficial overall. Depending on individual rehabilitation plans, this would result in moderate localized impacts, but negligible impacts parkwide. Access restrictions to sensitive cultural resource sites would be beneficial in reducing visitor-related impacts. No impairment to historic structures is anticipated from implementing the modified proposed action.

## CULTURAL LANDSCAPES

### Analysis

Under this alternative, increased maintenance, monitoring, and interpretive programs for cultural landscapes would be beneficial for both their long term preservation and for public education and appreciation. Individual site reports and development plans would be developed for cultural landscapes at visitor destinations. Treatment recommendations for landscapes at Ash River would also be implemented as part of this alternative, as well as those recommendations in the ongoing historic waterway study to protect and interpret significant features along the fur trade route. The development and implementation of individual management plans would provide much needed guidance for the park in protecting and preserving landscapes, as well as managing visitor use and future development in these areas.

### Cumulative Impacts

As described for alternative 1, the waterway transportation system of the voyageurs, along with its portages, forested uplands, rocky shorelines, and other geographic features, is part of a larger cultural landscape of the fur trade. Park legislation and this alternative would provide for vegetation management to reestablish an environment that more closely resembles that present during the time of the fur trade. While this would create a cultural landscape of the fur trade, it would have impacts on landscapes associated with historic activities occurring after the fur trade period — landscapes that have changed and will continue to change primarily as a result of regrowth of vegetation after logging, changes in recreational activities through the removal of cabins, and changes in fire management policies. Some specific landscape features, such as earthen embankments that indicate the presence of historic logging camps, would be protected through localized vegetation control, but the larger landscapes they are associated with would be reclaimed by vegetation.

### Conclusion

Increased maintenance and monitoring programs for all landscapes, as well as the development and implementation of management plans for identified landscapes, would be beneficial to preservation and subsequent management. No impairment to cultural landscapes is anticipated from implementing the modified proposed action.

## COLLECTIONS

### Analysis

As with alternative 1, only those objects representative of the park's history would be collected and stored. Collections would receive regular maintenance and conservation treatment as needed. Access to collections would be facilitated through various media such as the Internet, publications, and exhibits. This alternative would necessitate a more focused scope for object acquisitions and would increase public access to and appreciation of the park's collections.

### Cumulative Impacts

Given the park's mandatory compliance with federal curation regulations, no cumulative impacts are anticipated.

264

### Conclusion

The management of collections under this alternative would be beneficial as new acquisitions would proceed at a more manageable rate commensurate with park staffing to properly record and curate objects. Increased access to collections would also be beneficial in allowing for further research and dissemination of information, as well as creating support and awareness among the public for the importance of collections. No impairment to collections is anticipated from implementing the modified proposed action.

### ETHNOGRAPHIC RESOURCES

Impacts on ethnographic resources would be the same as alternative 1 (see page I–236). No impairment to ethnographic resources is anticipated from implementing the modified proposed action.

## IMPACTS ON THE VISITOR EXPERIENCE — FIRE MANAGEMENT

### ANALYSIS

As described for alternative 1, fire management (suppression, prescribed burning, and fire use) could temporarily inconvenience visitors because of smoke and site or area closures. Also, during the planning process for prescribed burns, impacts on visitor use areas could be eliminated or reduced by selecting wind directions that would ensure that smoke would not be targeted to these areas. Through planning, public notification, and education, fire management activities at Voyageurs could inconvenience visitors but would have little effect on the impairing visitor experiences.

### CONCLUSION

Fire management activities at Voyageurs could inconvenience visitors but would have little effect on impairing visitor experiences.

## IMPACTS ON THE VISITOR EXPERIENCE — VISITOR USE AND FACILITIES

### ANALYSIS

### Parkwide Management

**Facility Use Fees.** No facility use fees would be established pending the completion of a feasibility study (to be conducted within three years of the approval of a general management plan).

**Overnight Permit System.** Pending the completion of a feasibility study about an overnight permit system, overnight visitors would have to obtain a no-fee permit. Establishing such a system would allow the park to collect more accurate visitor use data and to improve the management of overnight use and related facilities, the same as alternative 1. The need to get overnight permits would inconvenience some visitors. Requiring all overnight visitors to obtain a no-fee permit would mean that visitors could no longer enjoy the same degree of spontaneity and freedom for overnight use of the park.

Completing the feasibility study within three years following the approval of the plan would provide adequate time to prepare the most appropriate overnight permit system, if warranted. This approach and timeline would help ensure that the most appropriate system was selected and that visitors had time to understand the system before it was implemented.

**Monitoring Programs.** Establishing a comprehensive monitoring program would result in better data collection concerning seasonal visitor use patterns, visitor needs and experience, and resource impacts. Over the long term, this would contribute to better-informed decisions, thus enhancing park management and the visitor experience.

### Water Management Areas

**Integrated Uses.** Conflicts between users on the four major lakes would be diminished as a result of distributing brochures about reducing impacts, programs, and park orientation that emphasizes boating etiquette relative to different user groups. This would result in improved visitor experience for the users of motorized and nonmotorized watercraft.

**Overnight Houseboat Use.** Under the modified proposed action an interim permit system would allow 60 houseboats per basin (park total of 120) and would help ensure a future balance of in-water recreational uses. This interim quota would go into effect following approval of the general management plan. However, developing a houseboat management plan, with public input, would help ensure that future decisions about houseboat management addressed user needs, as well as overall visitor experience concerns.

Interim limits could generate some adverse impacts to the visitor experience for houseboaters, particularly if this activity increased substantially over the next three years. However, this is not likely since the decision about interim limits took into account existing trends in houseboat use, and projected use over the next three years would be accommodated. Houseboat users might find it difficult at times to obtain permits, especially during peak periods and weekends. Potential houseboat users might need to plan in advance to obtain an interim permit.

Since houseboats would be less likely to dominate in-water uses due to the interim limits, the experience for other park visitors could improve.

**Fixed-Wing Aircraft Use.** Commercial and private fixed-wing aircraft would continue to provide access to the remote areas of the park's interior, the same as alternative 1.

**Boats on Interior Lakes.** Establishing fees to use NPS boats on interior lakes would continue to provide visitors with a unique opportunity to experience interior primitive lake areas. It would also encourage greater care of boats by some users, thus improving the experience for those taking advantage of the program, and it would help fund maintenance costs for the equipment. Fees could discourage a few visitors from participating in the program, but the adverse impact would be negligible.

**Snowmobiles.** Snowmobiles would continue to dominate winter use, and trails would provide for a quality park experience, the same as alternative 1.

**Special Use Zone.** Similar to alternative 1, the special use zone would continue, but to be permitted, special events would have to comply with certain terms and conditions. Events would have to have a meaningful association with the park, to contribute to visitor understanding of the significance of the park, and to not impair park resources or visitor experiences (including no interference with peace and tranquillity or the natural soundscape, or other appropriate visitor activities). This would ensure that events were compatible with the purpose and significance of the park.

## Land Management Areas

### *Developed Area*

**Visitor Centers.** Year-round visitor center operations at Rainy Lake, expanded hours of operation at Kabetogama Lake and Ash River as needed, and minimal expansion of outdoor facilities at Ash River and Kabetogama Lake would greatly expand opportunities for visitor contact and educational programs. The development of a multi-agency visitor center at Crane Lake would be a major benefit, since many recreationists that visit the park or neighboring recreation areas stage their visits from this community. Expanded outdoor and temporary facilities at the Ash River and Kabetogama Lake visitor centers would accommodate larger groups, thereby helping disperse visitors, reduce crowding, and improve the visitor experience. More park patrons would likely visit the centers since program offerings would be expanded and diversified.

**Parking.** Parking conditions at the Rainy Lake, Kabetogama, Ash River, and Crane Lake developed areas would be improved by working with outside entities to provide parking and transportation needs, resulting in positive localized impacts. During peak seasons of use having to use off-site parking areas would inconvenience a small percentage of visitors, but shuttle services would accommodate visitors, ensure safety, and reduce inconveniences. The success of this program would depend on the park creating strong partnerships with private lodges, adjacent communities, and the Minnesota Department of Natural Resources.

**Boat Launches.** Separate boat launch facilities for nonmotorized canoes and kayaks and motorized watercraft (motorboats) would provide for safe and pleasant water access. Improvements would especially benefit nonmotorized users and could potentially encourage greater nonmotorized boat use.

**Bicycle/Pedestrian Facilities.** Designated bike lanes (paved shoulders) on park entry roads to the Ash River and Rainy Lake visitor centers would improve the visitor experience, provide for safe bike and pedestrian access, and potentially encourage more intermodal transit use in the park. The park would also pursue trail connections or linkages to existing lanes and paths outside the park that result in additional benefits.

### *Lakecountry Area*

**Day and Overnight Use Sites.** Under the modified proposed action, an additional 66-160 day and overnight use sites would be developed (280–320 total). Full development would include 145 tent campsites, 80 houseboat sites, 17 traditional day use sites, and 10–15 visitor destination sites (day use), and 2 small campgrounds. The number of additional sites to be provided would be determined by monitoring visitor use levels, needs, and site resources. Approximately 20% of the lakecountry shoreline would be high density (subarea 1), less than alternative 1 or 3, but slightly more than under alternative 2. A lower density of development throughout most of the lakecountry management area would contribute to a favorable experience for a majority of overnight visitors by maintaining qualities of privacy and separation.

A maximum group campsite limit of 30 people would exclude larger groups desiring to camp overnight at one site in the park, but result in negligible adverse impacts parkwide. These limits would help ensure a remote, peaceful visitor experience for other users. Park managers would work with outside entities to ensure that appropriate group camping facilities were provided outside the park.

**Day Use.** Overnight camping and mooring sites could continue to be used by day visitors until 2 P.M., thereby helping reduce site-use conflicts and frustration for users seeking vacant overnight developed sites. If based on a study, a permit system warranted eliminating day use at overnight sites, overnight visitors would be assured of being able to locate and use a tent or houseboat site during any time of the day. Day users would be inconvenienced to a moderate degree, and the use of undeveloped sites for day use (without fires) would likely increase. Negative impacts to day users would be minimized since the development of day use sites would be high priority.

**Use of Undeveloped Sites.** If the site monitoring study recommended that overnight use of undeveloped tent and houseboat sites in the lakecountry be phased out, the experience of many park visitors that prefer to use undeveloped sites would be adversely impacted. However, monitoring of use would allow these impacts to be known before a decision was made. Over the long term visitors could benefit if the use of undeveloped sites was stopped because shoreline areas would remain more natural and overnight use would be greater dispersed by only allowing the use of developed sites.

**Fires and Firewood.** Starting in the summer of 2005 fires would be permitted only in metal fire rings at developed day and overnight use sites. This would result in localized adverse impacts to the visitor experience, particularly inconveniencing day users. Discontinuing fires at undeveloped sites would require the use of a liquid fuel campstove. However, over the long term adverse impacts to the visitor experience would lessen as more day use sites were constructed.

Allowing the gathering of dead and down firewood would generate localized adverse impacts to the visitor experience through site degradation, the same as alternative 1. However, encouraging visitors to bring their own firewood would reduce these impacts.

**Visitor Destination Sites.** Cultural and natural history interpretation would be expanded by developing 15–20 additional visitor destination sites, which would significantly assist visitors in understanding important park themes. Participation levels in site-specific educational programs and exhibits would increase, thereby generating benefits for visitors.

### *Backcountry Trail Areas*

**Summer Trails.** An expanded, nonmotorized summer trail system that includes an additional 48.6 miles of hiking trails (33.1 in the park, potentially 15.5 miles out of the park) would provide substantially more hiking options and generate major benefits for visitors. Additional trails in specific areas of the Kabetogama Peninsula would form a comprehensive trail system, linking several key destinations. A minimal number of smaller loop trails dispersed throughout the park would be developed in high-use areas. The proposed Kabetogama–Ash River trail would provide an extensive system for visitors without access to boats, resulting in major positive impacts to the experience of park guests and local residents. A feasibility study would be developed to determine the potential for an approximately 18-mile out-of-park regional trail to link the communities of Ash River and Crane Lake. This extension of the Kabetogama–Ash River trail would provide even greater benefits to visitors and local residents, and link the southern portion of the park to other public recreation lands.

**Winter Trails.** The proposed Kabetogama–Ash River trail would provide a 26-mile nonmotorized winter trail system and afford greater cross-country skiing and snowshoeing opportunities within and near the park boundaries. The trail would follow portions of the summer Kabetogama–Ash River trail alignment in addition to frozen lake surfaces. This would provide a major benefit to nonmotorized users due to the trail's length, connectivity to local communities and services, and separateness from winter motorized use areas.

268

### *Primitive Areas*

**Camping.** Limiting party sizes to a maximum of six people in primitive areas would help ensure a feeling of remoteness and retain natural quiet for the small percentage of primitive area users. This limit, plus requiring a permit and not allowing fires, would help maintain a quality primitive area visitor experience.

## Cumulative Impacts

Under the modified proposed action collecting visitor use data by means of a no-fee overnight use permit system would enable the park to develop a limited database of visitor information, the same as alternative 1. If warranted following a feasibility study, entry and overnight fees/permits would provide a mechanism for collecting comprehensive visitor use data, enabling park managers to make informed decisions about visitor needs, facility development, and resource conditions. Over the long term a quantifiable database of visitor information would assist partnering organizations in developing mutual strategies for resource and visitor management. If implemented, park fees could displace a minor percentage of park visitors to neighboring recreation areas.

The proposed Kabetogama–Ash River mainland trail would provide a major connection between the communities of Ash River and Kabetogama, linking to regional systems beyond the park boundary. A feasibility study would evaluate extending the trail to Crane Lake, providing linkages throughout much of the southern portion of the park and surrounding area.

## Conclusion

The need to obtain no-fee overnight permits would inconvenience some users, who could no longer enjoy the same degree of spontaneity and freedom for overnight use of the park. Improved collection of visitor data by means of a no-fee permit system for overnight use would provide limited visitor use information, the same as alternative 1. The potential establishment of facility use fees would be the subject of a feasibility study.

Through a no-fee permit system, an interim limit of 60 houseboats per basin (a park total of 120) would help ensure future balanced in-water uses and allow for some expansion from current use. Houseboat users might find it difficult at times to obtain permits, especially during peak periods. Since houseboats would not dominate in-water uses, the experiences of other park visitors could be improved. Developing a houseboat management plan, with public input, would help ensure that future decisions about houseboat management addressed user needs, as well as overall visitor experience concerns.

Fixed-wing aircraft use would continue on the seven interior lakes, providing access to remote park areas.

Requiring events in the special use zone to meet certain terms and conditions could inconvenience some users. Other users, however, would appreciate the fact that special events would have to be compatible with the purpose and significance of the park.

Year-round visitor center operations at Rainy Lake, expanded hours of operation at Kabetogama and Ash River as needed, minimal expansion of outdoor facilities at Ash River and Kabetogama Lake, and a multi-agency visitor center at Crane Lake would provide major benefits to visitors. Parking at developed areas would be improved during peak periods by partnering with others to provide off-site parking and shuttle service, benefiting the visitor experience as long as quality partnerships were created with adjacent communities, lodges, and public entities.

Developing an estimated additional 66–106 day and overnight use sites (280–320 total), with only 20% of the shoreline at high density (subarea 1) and possible continued use of undeveloped sites, would accommodate an increase in overnight visitation, although less than alternative 1 and perhaps 3. Developed sites would be dispersed, affording users a greater sense of separation and seclusion, unless nearby undeveloped sites were used. Limiting party size to 30 persons within the park would accommodate large groups while retaining a quality visitor experience. Partnering to provide appropriately sized camping facilities for large groups outside the park would benefit these user groups.

Developing 15–20 visitor destination day use sites would afford greater opportunities for interpretation and education about park resources, with benefits to visitors parkwide.

Permitting fires only in metal fire rings at developed day and overnight use sites would result in localized adverse impacts to visitors, especially for day users seeking undeveloped or developed sites after 2 P.M. and wanting to build fires. Negative impacts to day users would be minimized since the development of day use sites would be a high priority.

Allowing visitors to gather dead and down firewood would generate localized adverse impacts to the quality of visitor experience due to environmental degradation, the same as alternative 1. However, encouraging visitors to bring their own firewood would reduce these impacts.

An expanded nonmotorized trail system that includes an additional 48.6 miles of summer hiking trails and about 26 miles of winter trails would result in major benefits to visitors and local residents by providing a comprehensive system of paths on the Kabetogama Peninsula and extending the existing network. The Kabetogama–Ash River trail would link primary destinations on the mainland, a major benefit to park guests without access to boats.

No impairment to visitor experience is anticipated from implementing the modified proposed action.

## IMPACTS ON THE VISITOR EXPERIENCE — NOISE AND REMOTENESS

### ANALYSIS

#### Motorized Uses

As described for alternative 1, there would be no areas on the four major lakes where users of nonmotorized watercraft could be assured of finding quiet areas with limited noise from motorized uses. Allowing limited fixed-wing aircraft and motorized uses (including snowmobiles) in remote areas would continue to diminish the quality of the experience for a small percentage of visitors.

#### Nonmotorized Uses

Developing a Kabetogama–Ash River trail for nonmotorized use would provide access to remote and quiet areas of the mainland for summer and winter users, a major benefit to visitors and area residents. Extending the trail to Crane Lake would provide even greater access by visitors to quiet and secluded areas.

770

### Visitor Use of Day and Overnight Sites

Building a total of 280–320 day and overnight use sites and permitting overnight camping and mooring at undeveloped sites would generate undetermined adverse impacts to natural quiet and the feeling of remoteness for other visitors. If undeveloped sites were used, additional localized adverse impacts on natural quiet and the feeling of remoteness for other visitors would occur. Developing one group campsite for a maximum of 30 people would increase noise a minor amount for nearby users. Noise and loss of remoteness would be less than alternatives 1 and 3, but greater than alternative 2.

### CUMULATIVE IMPACTS

No cumulative impacts have been identified.

### CONCLUSION

Adverse impacts to remoteness from motorized uses on seven interior lakes would be the same as alternative 1. Building a total of 280–320 day and overnight use sites, limiting groups to 30 people, and potentially eliminating the use of undeveloped sites would result in positive impacts to the natural quiet and feelings of remoteness, more than alternatives 1 and 3, but less than alternative 2.

## IMPACTS ON THE VISITOR EXPERIENCE — SAFETY

### ANALYSIS

Expanded programs for education related to boating etiquette and safety, and more partnerships for safety education, would help reduce safety conflicts between motorized and nonmotorized user groups.

Rerouting the Moose Bay trail/portage to extend to Ranta Bay would improve safety. The combined Mukooda Lake trail and ice road would need to be carefully designed to ensure safety for trucks and snowmobile users. Consolidating the Mukooda trail and ice road would provide safer winter travel for a large percentage of snowmobile users who follow these routes on frozen lake surfaces of the Namakan basin.

### CUMULATIVE IMPACTS

No cumulative impacts have been identified.

### CONCLUSION

Expanded opportunities for education related to boating etiquette and safety through programs and partnerships would benefit all user groups. As a result, conflicts between various in-water user groups would likely diminish.

Rerouting and consolidating snowmobile trail segments on the Mukooda Lake portage/truck route and the Moose Bay portage would benefit a large volume of winter users.

## IMPACTS ON THE VISITOR EXPERIENCE — CONCESSIONS

### ANALYSIS

Continuing current concession operations would positively affect contract holders by providing long-term economic opportunities and return on investment, as described for alternative 1. Concession operations would continue to provide desirable services for park visitors, and tour boats would provide opportunities for visitors without boats to experience the park. Potentially establishing a few additional concession operations would provide economic opportunities for the communities surrounding the park and would broaden visitor services.

### CUMULATIVE IMPACTS

No cumulative impacts have been identified.

### CONCLUSION

Continuing concession contracts would benefit contract holders, park visitors, and the National Park Service. The possible expansion of a few visitor services would meet additional visitor needs.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

### ANALYSIS

#### Visitor Center Operations

Visitor assistance and contacts with park staff would be improved through expanded seasons at the Ash River and Kabetogama visitor centers, as needed, plus the possible implementation of an entry and overnight reservation system. Potentially, a significant percentage of winter and shoulder season visitors at the Ash River and Kabetogama communities would use services available at one or all of these park facilities.

Developing an appropriately-sized visitor facility at Crane Lake would provide adequate space and services year-round for visitors to destinations in the northwoods region (Voyageurs, Boundary Waters Canoe Area Wilderness, Superior National Forest, Quetico Provincial Park, local resorts/lodges). This would benefit numerous entities and improve experiences of park visitors, as well as users of neighboring recreation sites.

#### Interpretive Programs, Publications, Projects, and Education

Pursuing a comprehensive interpretive plan focusing on the park's mission, purpose, and significance to a greater depth would ensure that interpretive programs fostered in visitors a greater appreciation of park resources. Visitor experiences would be enhanced through opportunities to navigate and understand historic trade routes and to participate in programs that focus on the history of the voyageurs. This would help focus park recreation on one of the more important reasons for the establishment of Voyageurs as a national park. Programs to better address visitor needs would allow visitors to more easily immerse themselves in experiencing the park.

The backlog of visitor orientation, information, and safety messages would be addressed with increased staffing and funding, providing greater benefits to visitors.

Educational and outreach programs would be expanded and diversified to address a diversity of subjects and age levels. On-site opportunities for education would be augmented by developing new curriculum, and use of new communication technologies. Overall, participation in interpretation and education programs would likely increase, and result in moderate to major benefits for park visitors.

### Educational Institute

Developing an educational institute through partnering with other entities would encourage diverse visitation, research, education, and park programming. The institute would likely help expand recognition of the park and provide programs for a wide diversity of people and age groups throughout the nation.

### CUMULATIVE IMPACTS

As described for alternative 1, regional visitor information facilities would continue to provide diverse services for visitors in the northwoods region. Under this alternative orientation, information, programs, and educational opportunities at the park and neighboring visitor destination areas would be expanded by developing a multi-agency visitor facility at Crane Lake. Extended hours and seasons of operations at Ash River and Kabetogama visitor centers as needed would provide for greater interpretive opportunities and help contribute to disperse tourists to regional areas. Developing an educational institute would promote greater regional and national interest in resources of the park and neighboring areas.

### CONCLUSION

Expanding seasons and hours of operation at visitor centers (as needed), developing an educational institute, cooperatively providing a multi-agency center at Crane Lake, potentially implementing an entry and overnight reservation system, and adding staff and funding would improve contacts between park visitors and staff and enhance visitor services. As a consequence, interpretive programming that emphasizes the park's mission, purpose, significance, opportunities for visitor education and understanding of park resources would increase and be available to a wider number of visitors.

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

### STAFFING

### Analysis

Additional staffing and funding would improve the efficiency of most areas of park operations — visitor services, maintenance, and resource management — thus enhancing the visitor experience and the protection of natural and cultural resources. Approximately 25 full-time equivalent and 22 seasonal positions would be added over time to accomplish management actions proposed under this alternative. The funding of some positions is expected through fee collections.

Additional staff would be needed to conduct feasibility studies for a user fee system, overnight permit system, and the use of undeveloped sites. If found to be feasible, additional staff would be needed to implement the overnight permit/reservation system and user fees, as well as the comprehensive monitoring and maintenance program. In addition, more rangers would be needed to enforce the use of permits, party size limits, the required use of metal fire rings, and day use rules. Additional enforcement rangers would also reduce response times for visitor emergencies and conflicts, as well as resource protection.

Additional personnel would be needed to staff and operate the proposed multi-agency visitor center at Crane Lake. Increased interpretive services would be available to more visitors and would improve the visitor experience. Additional staff would be needed to conduct resource management actions and to develop plans. Increases in annual operating funds would be needed to add staff.

Concessions management staff would experience a moderate increase in workload to manage the new limited concessions contracts for houseboats. Maintenance staff would experience an increased workload as day and overnight use sites and trails were developed and subsequently maintained.

### Cumulative Impacts

Additional staff would help alleviate the need for reliance on volunteers and human resources from outside the park.

### Conclusion

Developing additional facilities, regular monitoring, expanded programs, implementing a no-fee permit system for overnight use, and potentially establishing entry/user fees would result in significant increases in staff responsibilities, but less than alternative 2 or 3. However, additional park staff would improve the efficiency of park operations, and mitigate adverse impacts to park operational workloads.

## NPS OPERATIONS AND FACILITIES

### Analysis

A development plan for Namakan District operations that addresses building use and needs would improve the efficiency of operations and use of existing space, which would be a positive impact. This alternative would consolidate most of the maintenance functions of the Namakan District into a single area (Ash River operations area) with adequate workspace, offices, and utilities. Some of the vacated historic structures in the Kabetogama Ranger Station Historic District that are currently used for maintenance would be used by other staff, alleviating congested work and office space. Maintaining the Kabetogama marina for most Namakan District operations would eliminate the need to expand the marina by Building 94. This would maintain the scenic view from the Kabetogama Lake trail overlook. These actions would increase operational efficiencies and reduce confusion for visitors.

The proposed multi-agency visitor center at Crane Lake would expand park facilities and require support services. Visitor services and resource protection would increase as a result of this action.

Plans for an NPS workstation at Kettle Falls would provide work space for employees, which would improve services to the area, allow more visitor contact, facilitate programming, and provide greater protection for park resources.

### Cumulative Impacts

No new employee housing would be provided in the park. Providing additional employee housing through an outside partnership would generate positive impacts for seasonal park staff seeking short-term housing.

274

### Conclusion

Rearranging some operations and developing some additional maintenance facilities in the Namakan District, as well as developing additional facilities at Crane Lake and Kettle Falls, would result in positive impacts to park operations.

## PARTNERSHIPS

### Analysis

An increased focus on strengthening partnerships would improve communication between the National Park Service and others for the protection of resources and the development of visitor services. NPS involvement in activities along the park's boundaries would help minimize impacts on park resources and improve visitor services.

Closer cooperation with the Minnesota Department of Natural Resources and the Ontario Ministry of Natural Resources and the development of a joint fisheries management plan would facilitate unified management actions and enhance the park's natural fisheries. The pursuit of additional partnerships for cultural resources would increase the means and number of people available to conduct treatment and maintenance actions, as well as develop sites for visitor use.

Supporting cooperating agencies and partnerships for visitor safety would reduce emergency response times and provide greater patrol for everyday activities, helping increase a sense of safety for park visitors, as well as protecting resources. Active NPS participation in and support of other agencies' and organizations' planning, zoning, and land use activities would protect park viewsheds and what visitors value about the park, positively affecting visitor experiences.

A partnership for a recreational vehicle campground outside the park with lake access would increase opportunities for visitors who do not have a boat to use the park.

### Cumulative Impacts

An increased effort to expand partnerships would take more time and energy, but the effort would benefit the ability of park and regional managers to protect resources, provide quality visitor services, and build trust between constituents.

### Conclusion

Expanded partnerships and cooperation with various public and private organizations would afford greater opportunities to utilize the expertise of resource managers, recreation specialists, and service providers. Increased communications between the park and neighboring land managers would afford greater potential for developing common strategies for resource protection and recreational opportunities, resulting in major positive impacts.

## SOCIAL AND ECONOMIC ENVIRONMENT

### ANALYSIS

### Parkwide Management

No impacts are expected from natural resource management actions, including reestablishing natural fire regimes to the greatest extent possible, as long as potential impacts on adjacent communities as well as park visitors were considered.

Developing 10–15 destination day use sites, along with interpretive programs, would increase the potential for extended stays in the area, potentially attracting new user groups and positively affecting the surrounding community.

Adaptively reusing historic structures for park-related purposes could reduce operating costs. Expenditures during the construction and rehabilitation phase would provide a positive impact to the local economy to the extent that goods and services were purchased locally.

### Visitor Use and Facilities

#### *Parkwide Management*

The possibility of establishing facility use fees, and related impacts on users and the local economy, would be determined through a feasibility study.

#### *Water Management Areas*

Setting an interim limit of 60 houseboats per basin (private and commercial) that could stay overnight in the park would not have an adverse effect on the local economy. The maximum number of houseboats counted in the park during routine creel surveys was 36 in 1999 in the Namakan basin and 43 in 2000 in the Rainy Basin. If the limitation resulted in fewer houseboats in the park, there could be an adverse economic impact on local businesses that supply goods and services to those users. However, that impact would not be significant on the overall economy of the gateway communities.

#### *Land Management Areas*

Developing separate boat launches for motorized and nonmotorized watercraft, providing additional developed day and overnight sites, and developing destination day use sites would have positive impacts on the local economy. These impacts would occur both during construction and after completion of the projects because they would provide a broader range of services that could attract more visitors, make park access easier, and provide additional points of interest to retain visitors for a longer period of time.

There would be a slight adverse impact from requiring groups of 30 or more people camping overnight in the park to stay at different sites. This could possibly reduce the number of groups using the park.

Cooperatively developing pedestrian and bicyclist paths would improve interactions and relations between the park and the community.

Expanding the backcountry trail system would have no adverse effect on existing users. Rather, it would attract more and different hikers and skiers, resulting in increased local spending.

Working with partners to develop joint facilities would have a positive impact on both relations between the community and the park and on destination marketing.

Limiting party size to six and prohibiting open fires during at-large camping in primitive areas could slightly reduce the already small number of visitors participating in this activity. There would be no measurable economic impact from this change.

The extent to which the local community received a beneficial impact from increased park revenues would depend on the percentage of goods and services purchased in the local area. In fiscal year 1999, local purchases of goods and services were approximately 14% of total park expenditures.

### Interpretation, Visitor Services, and Education

#### *Parkwide Management*

Expanding concession services to other geographic areas of the park would improve the park's ability to attract new visitors, extend stays in the area, and provide additional revenue opportunities for the private sector. These actions would have a positive impact on the local economy. The partnership aspect of concession services would also improve relations between the community and the park.

Creating a comprehensive program of exhibits, displays, publications, and other educational tools would foster tourism and aid businesses in the gateway communities. Overall, the modified proposed action would have a slight positive effect on the area's economy and relations between the community and the park.

Creating an educational institute in partnership with local communities and others would attract new visitors and enhance the destination image of the park. Creating and staffing the institute would have a positive economic effect on surrounding communities. The cooperative nature of this development would enhance community cohesion and improve community facilities.

#### *Water Management Areas*

Creating a water-based historic trail and self-guided tour could both attract new visitors and extend the stays of visitors. This would have a positive impact on local economies.

### Park Operations, Facilities, and Partnerships

Increased park staffing would have a net positive economic impact on surrounding communities because new consumers would be added.

Several actions that would develop a self-sustaining sport fishery of native populations, if successful, would retain existing anglers and benefit the economic health of the gateway communities and resorts. The existing economic base is fishing, with 64% of the sampled users reporting it as a key activity in 1997 (Littlejohn 1998). If there were an actual or perceived adverse impact to the sport fishery in numbers of harvestable fish of desirable species, there would be an adverse impact to the area's economy. Given the significance of fishing, even the structure of the economy itself could be adversely affected if this impact was sufficiently severe. If there were more harvestable fish of desirable species, then there would be a positive economic impact on the communities and the resorts. The cooperative nature of the fisheries improvements would have a positive impact on community cohesion.

Pursuing a partnership with businesses and organizations outside the park to provide seasonal housing for both park and private resort employees would benefit the local economy.

### CUMULATIVE IMPACTS

Slight positive effects would result from proposed activities for cultural resources management, visitor facilities, visitor education, and park operations. Some positive economic and social effects would result from improved educational and interpretative facilities and programs, separated nonmotorized and motorized boat launches, expanded developed day use and overnight facilities, additional back-country trails, and developed visitor destinations. Quotas determined for commercial and private houseboats might have an adverse impact on community cohesion and relations between the community and the park, as it would set up public versus private competition as a result of limitations on use. It cannot be determined if limitations on the number of private houseboats would have an adverse economic effect. The impact of facility use fees would be the subject of a feasibility study.

### CONCLUSION

Creating a comprehensive program of exhibits, displays, publications and other educational tools would foster tourism and aid businesses in the gateway communities. Slight positive effects on the area's economy and relations between the community and the park would result from proposed activities for cultural resources management, visitor facilities, visitor education, and park operations.

If interim houseboat limits resulted in fewer houseboats in the park, there could be an adverse economic impact on local businesses that supply goods and services to those users. However, that impact would not be significant on the overall economy of the gateway communities. Possible facility use fees would be examined in a feasibility study.

## UNAVOIDABLE ADVERSE IMPACTS

Unavoidable impacts resulting from implementing the modified proposed action would be the same as those described for alternative 1, with the following exceptions. Small amounts of wetland vegetation could be removed through wave action or collisions from watercraft, or from the building of the Kabetogama–Ash River trail. Increased access to wolf habitat from this trail could be mitigated through adequate ranger patrolling of the trail.

Unavoidable impacts to cultural resources resulting from implementing the modified proposed action would be the same as those described for alternative 1, though monitoring, public education programs, and some limitations on visitor use would likely reduce the frequency of localized impacts.

Requiring all overnight visitors to obtain a no-fee permit would mean that visitors could no longer enjoy the same degree of spontaneity and freedom for overnight use of the park. Reducing group party size to 30 would mean that larger groups wanting to camp at a single location would need to find facilities outside the park. If the use of undeveloped overnight sites continued, some visitors could be disturbed, reducing the feeling of remoteness, natural quiet, and the overall quality of the experience.

278

## LOSS IN LONG-TERM AVAILABILITY OR PRODUCTIVITY TO ACHIEVE SHORT-TERM GAIN

If overnight use of undeveloped areas in the lakecountry continued, impacts to long-term productivity or the availability of park resources would be similar to those described for alternative 1. If this practice was stopped, an increase in the long-term availability or productivity of soils, vegetation, and wildlife habitat would occur. Vegetation management practices and fisheries management practices called for in this alternative would also result in greater long-term productivity than alternative 1.

For cultural resources the implementation of various monitoring, maintenance, and public education programs, combined with slight limitations on visitor use, would help improve the long-term availability of cultural resource sites for future interpretation and development.

## IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

The implementation of the modified proposed action would result in the same irreversible or irretrievable commitments of resources as for alternative 1, with the following exceptions. If undeveloped sites were closed and restored, the irreversible loss of soils and vegetation on these sites would be transformed into irretrievable losses. Each site could be restored by closing and planting vegetation or using other means to reestablish predevelopment conditions. Vegetation and fisheries management policies would help retrieve the loss of renewable resources.

## CONSISTENCY WITH NEPA SECTIONS 101 AND 102 (1)

As noted for alternative 1, section 101 of the National Environmental Policy Act indicates agencies should do the following:

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations

(2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable or unintended consequences

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources

The National Park Service now requires that each alternative be compared to these criteria to see the degree to which they are met. As noted in this section for alternative 1, all of the information needed to respond to these criteria is available by reading the preceding three summary sections (beginning with "Unavoidable Adverse Impact"). For instance, the section on long-term productivity and short-term gain explains which resources might be lost to achieve the recreational use of the park if the modified proposed action was implemented; this section encompasses criteria 1 and 5 above. Criteria 2 and 4 (and to some extent criterion 3 as well) speak to the quality of the environment. Some impacts are unavoidable, however, and these are summarized under the heading "Unavoidable Adverse Impacts." Criteria 3 and 6 deal with sustainability and the loss of resources. These are very similar to irreversible or irretrievable commitments of resources above.

NEPA section 102 (1) asks that agencies administer their own plans, regulations, and laws so that they are consistent with the policies outlined above to the fullest extent possible.

The modified proposed action is the most responsive of all the alternatives to criteria 4 and 5, as it is aimed toward achieving a balance between population and resource use that "will permit high standards of living and a wide sharing of life's amenities" and "an environment which supports diversity and variety of individual choice." While the park now has a multitude of opportunities for sportfishing or other recreation related to and dependent on motorized watercraft or snowmobiling, not as many options are available to other visitors. The modified proposed action would result in fewer developed sites being built than if existing plans and practices continued to be implemented. However, this would protect the experience of solitude and minimize impacts to natural resources from camping, consistent with criterion 5. Scoping and public comments indicated a need for additional day use sites; the modified proposed action would build these sites, as well as 15–20 destination day use sites. Since hiking trails in the park are primarily accessed by motorboat, this alternative also proposes a major new summer/winter trail for those without a motorboat, or wishing to spend a day hiking. This same trail would provide significant opportunities for cross-country skiing in the winter. An interim limit on the number of houseboats allowed to moor overnight in park waters would provide ample permits for private or commercial houseboaters for at least the next few years (given the continuation of current growth trends), but it would ensure houseboat numbers did not overwhelm the experience for non houseboating visitors.

The park would also revise its fire and vegetation management policies to support a broader range of resource management objectives, including the restoration of fire as a natural ecological process to the extent possible. It would also work more closely with state and Ontario fisheries and wildlife management agencies to restore natural fisheries and to reestablish native fish and wildlife species. Finally, it would begin more specific planning processes in several areas, including the monitoring of undeveloped areas used for camping to assess resource damage and rehabilitation potential, houseboat use and practices in the park, and the possibility of collecting facility use fees, the proceeds of which might be used to enhance wildlife habitat or other benefits for the park's natural and cultural resources.

The modified proposed action is comparable to alternative 1 for criteria 1, 2, and 6, but it would better meet criteria 3, 4, and 5, as described above.

# IMPACTS OF ALTERNATIVE 2

## NATURAL RESOURCES

### AIR QUALITY

**Analysis**

Impacts to air quality under alternative 2 would be similar to those under alternative 1 and the modified proposed action and would be confined primarily to emissions from motorized equipment used to grade and construct trails, additional campsites, or additional visitor facilities. Some small benefit relative to alternative 1 could result from discontinuing motorized use on interior lakes.

**Cumulative Impacts**

No changes in the cumulative impacts from actions inside or outside the park to those described for alternative 1 are expected under this alternative.

**Conclusion**

Cumulative impacts to visibility, ozone, mercury and particulates would be indistinguishable from those in alternative 1. Negligible benefits from closing interior lakes to motorized use might occur. No impairment to park air quality is expected from actions in this alternative.

### SOILS

**Analysis**

**Impacts Related to Overnight/Day Use Sites.** Alternative 2 would result in the creation of the fewest new developed sites (36 to 61 converted or new sites for a total of 250–275). It would also implement entry fees and a reservation/fee system for overnight use, prohibit firewood gathering in the park, and close undeveloped sites to overnight use. Day use would continue to be allowed at undeveloped sites, but sites with resource damage would be restored. Developed sites considered excessively damaged would also be restored, or closed if restoration was not possible. At-large camping in primitive areas would be prohibited. This alternative would also result in the creation of 20 paddle-in sites, the elimination of group campsites, and 10–15 new visitor destination day use sites.

This combination of actions in overnight sites would reduce the rate of resource damage to soils on-going from the use of developed and undeveloped sites, and it would minimize damage at newly created or converted sites subject to the criteria described in alternative 1. As noted in other alternatives, impacts to soils and other resources from overnight camping or day use come from four sources — (1) physical characteristics, (2) campers exceeding the capacity of the site, (3) a lack of knowledge or concern of minimal impact camping practices, and (4) wood-gathering practices (Larsen et al. 1999). Each of these four sources would be dealt with directly under this alternative. Undeveloped sites in poor locations would be closed and restored, or restored and reopened as developed sites. A reservation system would allow park staff to control party size, site location, and to disseminate educational information about low impact camping. All overnight use would take place in sites created and developed for this purpose. Wood gathering would be prohibited, minimizing the creation of social trails and resulting soil loss.

By reducing the total number of new sites overall, alternative 2 would have a major localized benefit to soils compared to alternative 1. Enforcing party size limits would result in a smaller average core area at newly created sites and would stop the spread at existing developed sites. Because relatively few new sites would be created, this would be a minor localized benefit to soils.

Although only developed sites have been studied to date (Larsen et al. 1999), assuming that a comparable percentage (20%) of undeveloped sites are overly damaged, then closing and restoring them as called for in alternative 2 could result in major localized but negligible parkwide benefits to soils.

**Impacts Related to Other Development.** Alternative 2 would include minimal increased development and site disturbance at the existing visitor centers and Kettle Falls, similar to the modified proposed action. Minimizing development would have a potential minor to moderate beneficial impact compared to alternative 1, and a minor to moderate adverse impact compared to existing conditions.

Only the Kabetogama–Ash River trail would be constructed under this alternative. About 33 miles of this trail would disturb soils, 15 miles of which would be outside the park. Assuming about 50% of the trail length involves soil grading or removal, a total of about 8 acres of soils would be affected. This is about 30% less than alternative 1, and a possible major localized benefit, although the type of soils affected would change, as wetland soil considerations discussed under the modified proposed action would apply to this alternative as well.

### Cumulative Impacts

Cumulative impacts to soils would be the same as those described for alternative 1.

### Conclusion

Alternative 2 would result in the fewest developed sites, with the closure and restoration of undeveloped sites. The reduction in the number of sites would have major localized benefits compared to alternative 1, and restoring undeveloped sites that were damaged would result in the stabilization of soils, an additional major localized benefit. A reservation/fee system for overnight use of developed sites would allow staff to enforce party size and educate campers on park regulations. This could mean a minor benefit to soils in developed sites compared to alternative 1. Minor to moderate local benefits to soils from minimizing development at Ash River and other visitor facilities compared to alternative 1 might also occur. Building only the Kabetogama–Ash River trail would disturb about 8 acres, 30% fewer acres than alternative 1, although the location and type of soil disturbed would differ. The nature of the soil might impose building or maintenance restrictions on the trail. No impairment of park soils is anticipated from implementing alternative 2.

## VEGETATION

### Analysis

**Impacts Related to Fire Management Policies.** Impacts to vegetation from fire management policies would result in reestablishing natural fire regimes to the greatest extent possible, even if temporary inconvenience to visitors or temporary reduction of visitor enjoyment occurred. The park has interpreted this to mean that fire would be returned not only to encourage the restoration of pine forest (see "Impacts of Alternative 1," page I–209), but to other communities including shrubby vegetation, beaver meadows, and vegetative types valuable for wildlife with larger burn "windows" than upland conifer forests. Under such a policy moderate increases in jack pine and white/red pine forests, as well as mixed woods more typical of vegetative communities that existed before logging, would be likely. While these increases may be moderate compared to current conditions on the entire park, they might be major benefits relative to changes that would occur under alternative 1. Minor treatment of wetland, aquatic, or other vegetation would also occur, comparable to alternative 1.

**Impacts Related to Overnight/Day Use Sites.** Providing few new developed sites and closing undeveloped sites to all but day use without fires would result in major localized benefits to vegetation compared to alternative 1 (see page I–210), and a negligible benefit to parkwide vegetation. A reservation system for overnight use would allow park staff to educate visitors on party size limits and firewood collecting, with resulting minor localized benefits to vegetation at developed sites. Revenues from fees could result in minor to moderate benefits if used to restore vegetation at overnight sites or other locations in the park.

Alternative 2 also calls for the closure of developed sites if the impact monitoring study found them to be overly damaged or if they could not be rehabilitated or restored. This same study would identify undeveloped sites experiencing resource damage and prioritize them for restoration. Site restoration could reverse damage to vegetation on 35–55% of 1,000 developed and undeveloped lakecountry sites in the park, returning 95 acres (38 ha) (assuming an average core size of 70 sq m) or more to more natural conditions. This would be a major localized benefit and a minor parkwide benefit to vegetation compared to alternative 1. An additional minor benefit to vegetation from requiring fires to be in metal rings and at developed sites only would also be possible.

Paddle-in sites in the lakecountry are proposed in alternative 2. Canoes can cause physical damage to plants in areas where they are being launched or removed from lakes, as well as trampling when paddlers leave the canoes to go onshore. In addition, the substrate can be eroded from pulling boats up onto shore, thus prohibiting plant growth if the area is used frequently. Although the park does not have siting criteria specific to paddle-in sites, the *Lakecountry and Backcountry Site Management Plan* does not allow sites to be located where they would affect "important vegetation." Therefore, any adverse impact on aquatic vegetation of human use of paddle-in sites would be incidental, ranging from negligible to locally moderate depending on the number of boaters, whether an area received repeated use, and whether visitors were aware of sensitive aquatic or wetland plants and would voluntarily avoid them.

Prohibiting at-large camping in primitive areas would reduce the amount of trampled vegetation from visitors bushwhacking to remote locations in the park. However, the extent of this benefit to vegetation would be no more than negligible or minor locally.

**Impacts Related to Other Proposed Development.** Alternative 2 proposes the development of the Kabetogama–Ash River trail and separate launch areas at visitor centers for nonmotorized watercraft. Impacts to aquatic vegetation related to these actions would be the same as described under the modified proposed action. Impacts to terrestrial vegetation from developed trails would be as much as 30% less than for either alternative 1 or the modified proposed action, a major localized benefit. Alternative 2 includes minimal increased development and site disturbance at existing visitor centers and Kettle Falls, as described for the modified proposed action. Minimizing development would have a potential minor to moderate beneficial impact compared to alternative 1, and a minor to moderate adverse impact compared to existing conditions.

**Impacts Related to Recreational Use.** Under alternative 2 no motorized use would be permitted on interior lakes, and boat rentals at Mukooda Lake would be eliminated. This would result in slight beneficial impacts to wetland vegetation in interior lakes and Mukooda Lake as a result of a decrease in turbidity, erosion, and physical damage to plants caused by hulls or boat propellers compared to alternative 1. The use of motorboats would still be permitted on the four major lakes in alternative 2, with the same impacts as described for alternative 1 (see discussion beginning on page I–212).

The number of developed houseboat sites would be reduced to a park total of 80 (or 40 sites per basin), and mooring would only be allowed at developed sites, which would be selected to avoid dense stands of aquatic vegetation and any sensitive species. Reducing the number of sites and restricting houseboats to developed sites only would result in negligible to minor beneficial impacts to aquatic vegetation compared to alternative 1.

Establishing no-wake boating areas in shallow bay areas in the four larger lakes under alternative 2 could help reduce impacts on water clarity, shoreline erosion, and aquatic plants (Asplund 1999). Many researchers believe that wave action and physical damage to plants as a result of boating is a more important factor in limiting plant growth than is turbidity (Vermaat and deBruyne 1993; Mumma et al. 1996; Asplund and Cook 1997). Research has shown that increased wave action caused by boats limits the growth of emergent species, and aquatic plants grow better in sheltered conditions (Vermaat and deBruyne 1993). Alternative 2, therefore, would have minor to moderate localized or negligible to minor parkwide beneficial impacts to aquatic vegetation in the larger lakes compared to alternative 1 as a result of no-wake water areas.

**Impacts Related to Visitor Services, Education, Interpretation.** Alternative 2 proposes to develop a comprehensive interpretive plan and to expand the existing interpretive program to focus on critical resource issues, with negligible to minor benefits to unique or fragile vegetation.

### Cumulative Impacts

Cumulative impacts to vegetation would be the same as those identified in the modified proposed action. Staffing levels would be increased, and detection and containment of exotics improved compared to alternative 1 as a result.

### Conclusion

Changing the focus of fire management to support a broader range of resource management objectives under this alternative could have moderate benefits to native pine and mixed-wood communities, minor benefits to wetlands compared to existing conditions, and major benefits compared to changes in forests as a result of the use of fire and other practices described in alternative 1.

Closing undeveloped sites to overnight use would result in major localized benefits to vegetation compared to alternative 1. Restoring damaged sites would result in additional major localized and minor parkwide benefits for vegetation. Educating visitors about low-impact camping and park regulations through a reservation system could have minor benefits for vegetation at developed sites. Revenues from fees could result in minor to moderate benefits if used to restore vegetation at overnight sites or other locations in the park. Minimizing the number of overnight sites would also mean major localized benefits to vegetation in the lakecountry compared to alternative 1. Prohibiting at-large camping in primitive areas could result in negligible to minor positive impacts on vegetation. Impacts to aquatic or wetland vegetation in the area of paddle-in sites could occur, although they would be incidental and likely be no more than locally moderate. Minimizing the expansion of visitor center facilities would have a minor to moderate localized benefit to vegetation compared to alternative 1 (the same as the modified proposed action). Creating substantially fewer miles of trails (30%) could result in major localized benefits to vegetation along those trail routes proposed in alternative 1. Building fewer miles of trails overall would have a major localized benefit to upland vegetation. No impairment to park vegetation is expected from implementing this alternative.

The impacts of increased turbidity from boat propellers in shallow water, or physical impacts of boats colliding with and shearing or removing wetland vegetation, would be about the same as other action alternatives on the park's large lakes. However, these impacts would be eliminated from all interior lakes except Mukooda, resulting in a negligible or minor benefit to aquatic and wetland vegetation. Designating no-wake boating areas on some shallow, large bays on the major lakes could result in minor to locally moderate benefits to shoreline vegetation. Impacts to some types of wetland vegetation from completing the Kabetogama–Ash River trail or building boat launches would be similar to those described in the modified proposed action, resulting in a minor impact parkwide. Increased funding and staffing could result in negligible to major benefits to native plants from the early detection and elimination of exotics.

## WATER QUALITY AND WATER RESOURCES

### Analysis

**Impacts Related to Development.** Impacts from erosion would occur under this alternative, but to a lesser extent for the reasons described for soils above. The effect would remain negligible, however.

**Impacts Related to Houseboat Graywater.** The number of overnight houseboat sites would decrease to 40 per basin in this alternative, with a maximum of 50 houseboats allowed per basin at any one time. Under this alternative all houseboats would require certification that requirements for holding graywater, as well as blackwater, had been met. This would result in the elimination of between 216,000 and 288,000 gallons (830.000 to 1.1 million liters) of graywater in the lakes of the Namakan basin, and from 228,000 to 304,000 gallons (877,000 to 1.17 million liters) in Rainy Lake, a minor to moderate localized but negligible parkwide benefit to water quality.

**Impacts Related to Recreational Use.** Alternative 2 is the only alternative that would result in the establishment of no-wake boating areas in bays of each of the park's large lakes. It is possible that wave action in these bays now moves discharged oil, fuel, and toxins to the shoreline where it concentrates; if so, establishing no-wake areas would reduce accumulation in these locations, with a resulting negligible to moderate localized benefit to water quality. However, if the number of boats on the large lakes remained the same as in other alternatives, concentrations overall would not change, and impacts would simply be transferred to deeper water or other locations on the lakes. It is also likely that motorboats traveling at less than full throttle would discharge less fuel or combusted byproducts such as PAHs.

Alternative 2 would also result in the elimination of boat rentals on Mukooda Lake. This action could reduce concentrations of petroleum products and PAHs on this lake, a minor benefit to water quality.

This alternative would also eliminate all motorized uses, including fixed-wing aircraft uses, on all interior lakes except Mukooda, resulting in a negligible benefit to water quality on these lakes.

### Cumulative Impacts

Cumulative impacts would be the same as those described for alternative 1 (see page I–217).

### Conclusion

Cumulative impacts from septic systems, oil and grease from motorboat exhaust, fueling stations, and snowmobiles, and runoff from parking lots or roads would be similar to those described in alternative 1, as would impacts to natural hydrology from managed lake levels. Pollution of the park's large lakes from discharged fuel and toxins would remain the same as or similar to alternative 1, with negligible benefits to interior lakes from prohibiting motorized use. Requiring houseboats to store graywater could have negligible overall but minor to moderate localized benefits to water quality compared to alternative 1. Establishing no-wake boating areas could reduce fuel emissions and reduce the accumulation of discharged petroleum products along shorelines, with a possible negligible to moderate benefit to localized water quality. Snowmobiles would have additional minor cumulative effects lakewide and moderate or major localized effects on both petroleum products and PAH levels, the same as alternative 1. Eliminating boat rentals on Mukooda could eliminate a minor impact to water quality from fuel discharged from rental boat engines. No impairment of the park's water quality resource is anticipated from implementing actions in this alternative.

## FISHERIES

### Analysis

**Impacts Related to Parkwide Management Policies.** Park fisheries management policies would be the same as those described for the modified proposed action. Returning a management focus to naturally sustaining populations of native fish would be consistent with NPS direction and policy mandates, benefiting the park's native fish populations. However, the extent of these benefits is unknown, and they could be negligible to major.

**Impacts Related to Recreational Use.** It is possible that slower moving boats and less wave action in no-wake boating areas could result in less fuel released, less PAH produced, and lower concentrations of petroleum products along the shoreline environment. If this is true, fish inhabiting these areas could experience benefits of unknown magnitude relative to alternative 1.

### Cumulative Impacts

Cumulative impacts would be the same as those described under alternative 1 (see page I–225) and would occur as a result of mercury, exotic species, and regulated lake levels.

### Conclusion

Impacts from sportfishing, managed lake levels and pollution would have the same minor adverse effects, as described in alternative 1, with the potential for moderate to major impacts if current mitigation failed. Cooperative efforts with other agency managers and an emphasis on reestablishing natural, self-sustaining populations of native species could benefit the park's native fisheries, but the degree of benefit is unknown and could range from a negligible to major positive impact. Designating no-wake boating areas could result in negligible to major benefits for fish in these areas. No impairment to the park's fisheries from implementing actions in this alternative is anticipated.

## WILDLIFE

### Analysis

**Impacts Related to Parkwide Policies.** Park policies for wildlife management would be the same as those described under the modified proposed action. The return of a more natural fire regime would benefit those wildlife species that prefer shrubby vegetation, open areas, or a mix of habitat types. Species that might benefit include warblers (such as the golden winged, chestnut-sided, and magnolia warblers), loons, least flycatchers, moose, beaver, red fox, and a host of others (Green 1995; Heinselman 1996).

**Impacts Related to Overnight/Day Use.** The combination of closing and restoring undeveloped sites, minimizing campsite development along the shoreline, using a reservation system to explain regulations, and restricting party sizes and firewood collection would have several benefits for wildlife relative to alternative 1. Human disturbance would be restricted to a total of 250–275 sites, which would mean that longer stretches of shoreline in the lakecountry would be free of human presence and impacts. Minimizing the density of overnight sites could bring moderate to major benefits to wildlife sensitive to the presence of humans compared to alternative 1. Educating visitors on low-impact camping could bring additional negligible to minor benefits for wildlife near developed campsites.

Closing undeveloped sites to all but day use visitors would reduce the frequency and intensity of human disturbance to wildlife in otherwise relatively undisturbed lakecountry habitat. Wildlife occupying the shoreline of the park's lakecountry could experience major localized benefits, and minor to moderate benefits to wildlife parkwide. Restoring undeveloped sites that were damaged would create shrubby or other upland habitat, shoreline vegetation for wildlife, or return natural soil conditions and soil-dwelling invertebrates. Eventually, forests or mature and diverse aquatic vegetation could return, bringing moderate or major benefits for some individual wildlife, and negligible benefits to park wildlife overall.

Educating visitors about no-impact uses by park staff could mean that visitors using developed sites would be more likely to remain close to the core area of the site, thereby reducing impacts to wildlife living or breeding in nearby habitat. Some wildlife that prefer sites occupied by humans as habitat would be relatively adversely affected by this alternative compare to alternative 1, but the impact would be negligible. Increases in conflicts with black bears would be far fewer than under any other alternative, a moderate benefit compared to alternative 1.

Establishing paddle-in sites would provide access to areas now considered inaccessible. If the sites were not located carefully, impacts to wildlife in these remote areas, particularly if there was emergent shoreline vegetation in the vicinity, could be locally severe. Loons, for example, nest in this type of vegetation, and fish can use them as nursery grounds. Muskrat, beaver, otter, and mink can also occupy marshy, back bay habitat.

Prohibiting at-large primitive camping might have benefits for wildlife. As described for alternative 1, the energy expended by wildlife in escaping from humans tends to be greater when wildlife encounter people moving cross-country or off trails. Confining visitors to developed sites in the backcountry could reduce these effects.

Establishing 10–15 visitor destination sites at locations to view or experience a particular cultural or natural resource could result in disturbance or temporary displacement, with a negligible to moderate localized impact on wildlife. This impact is unlikely to be more than negligible on a parkwide basis.

**Impacts Related to Proposed Development.** Developing trails and constructing expanded visitor facilities or other proposed development would remove some wildlife habitat and provide access into wildlife habitat that was previously relatively undisturbed. The creation and use of the Kabetogama–Ash River trail would also result in the removal of some small portions of relatively unique habitat for wildlife; impacts to wildlife would be the same as those described for the modified proposed action (that is, possibly locally severe, but negligible parkwide).

**Impacts Related to Recreational Use.** Establishing no-wake water areas would reduce noise from motorboats, but could increase disturbance to wildlife sensitive to slow-moving watercraft, such as eagles, loons and waterfowl (Anthony et al. 1995). Noise can cause energy loss and reduced reproductive success, and the reduction in speed could mean increased survival or fledged offspring in some cases. The magnitude of such a benefit relative to alternative 1 could be locally substantial, particularly in bays where motorboats are concentrated now. It is likely that an increased number of canoes or other nonmotorized watercraft would begin to use no-wake areas, and that motorboats in these bays would take longer to travel to a particular destination. This increase in the time boats are physically present is likely to have an adverse impact to fish-eating birds through passive disturbance or to species threatened by slow-moving watercraft. It is not known whether designating no-wake boating areas in shallow bays would benefit or adversely affect shoreline wildlife as a result of reduced speeds or types of boats.

No-wake designations would reduce damage to overhanging bank habitat and some fragile wetland vegetation used by aquatic wildlife as habitat. Establishing no-wake water areas in several of the large bays could result in minor localized benefits for aquatic wildlife, or wildlife occupying habitat on or near the shoreline as a result of decreased wave erosion.

Impacts from motorized boat use on the rest of the park's large lakes would be the same as those described under alternative 1 (see page I–224). Closing all interior lakes except Mukooda to fixed-wing aircraft use could have major localized and negligible parkwide benefits for wildlife by eliminating an intermittent and temporary source of loud noise.

Under alternative 2 the boats on interior lakes (BOIL) program would be stopped. Data evaluating the impact of this program on loon nesting on interior lakes has been inconclusive. Productivity on interior lakes without canoe and boat rentals overall averaged 0.25 chick per adult from 1979 to 1989, and 0.21 from 1990 to 1999. While productivity for lakes with boats or canoes was lower (0.18 chick per adult) in the 1980s, it was higher (0.30 chick per adult) in the 1990s. Despite these confusing numbers, "naïve" loons (those without much exposure to humans) are known to be relatively easier to flush from nests (McIntyre 1988). The strength of the flight response is greater as well (see "Chapter 3: The Affected Environment"), and nesting loons may leave eggs uncovered long enough that they are vulnerable to predators, or that the embryo is no longer viable. Loons are particularly vulnerable to the effects of human disturbance in the early part of their nesting cycle, in May and early June. This is the time visitors begin using the park's boats on interior lakes. Even though some loons habituate to human disturbance, one study found the number of fledged juveniles per nest attempt was significantly greater after posting protective floating signs around loon nests, indicating the positive influence of voluntary closures (Kelly 1992). Discontinuing the BOIL program could have a negligible to moderate benefit to loons.

### Cumulative Impacts

Cumulative impacts to wildlife would be the same as those described for alternative 1 (see page I–225).

### Conclusion

Under this alternative, park policies to reestablish fire as a natural ecosystem process to the extent possible would result in minor benefits to native species requiring openings in forest canopy, and/or mature pine forests compared to alternative 1.

Limiting overnight use to developed sites and minimizing shoreline development would reduce the frequency and intensity of human disturbance and leave the most shoreline habitat open to wildlife use of any alternative. Restoring undeveloped sites would re-create habitat. The combination could have major benefits for individual animals, minor to major benefits for lakecountry wildlife, and negligible to minor benefits to park wildlife overall. Educating campers in developed areas could have a negligible to minor benefit for wildlife in those areas. Minimizing the number of developed sites and leaving relatively long stretches of shoreline free from human inhabitants would have moderate to major benefits for lakecountry wildlife sensitive to the presence of humans. Paddle-in sites might result in major localized impacts to wildlife, although these impacts could be avoided through careful siting. Visitor destination sites might result in temporary disturbance of wildlife.

As described for the modified proposed action, development, including the Kabetogama–Ash River trail, would remove habitat and displace wildlife. Noise during construction and subsequent human use of the trail could temporarily disturb and displace wildlife. If animals occupy unique habitat, such as some of the wetland types the trail would necessarily traverse, impacts to individual animals or family groups could be severe. However, parkwide impacts of the trail on wildlife would be negligible or minor.

Designating no-wake boating areas would have positive impacts on wildlife sensitive to noise, and adverse impacts on species threatened by slow-moving boats. Some small benefit from a reduction in wave erosion of overhanging bank or sensitive wetland vegetation in no-wake areas would be possible. Closing all lakes except Mukooda to fixed-wing aircraft use could have major localized and temporary benefits for wildlife at these lakes, and a negligible benefit to wildlife overall in the park.

Nonmotorized use of backcountry lakes by small boats and canoes might be adversely affecting loon reproduction, as loons nesting in areas without frequent human disturbance expend significantly more energy escaping when they are disturbed. Discontinuing the boats-on-interior-lakes program could have negligible to moderate benefits on loon reproduction on these lakes.

No impairment of the park's wildlife resources from implementing actions in this alternative is anticipated.

## SPECIES OF SPECIAL CONCERN

### Analysis

**Bald Eagle.** *Impacts Related to Park Management Policies* — No differences between policies described for alternative 1 (see page I–227) and this alternative are expected.

*Impacts Related to Overnight/Day Use* — Alternative 2 would result in the fewest developed sites on the shores of the large lakes and would restrict campers in both the lakecountry and backcountry to developed sites only. These actions could leave longer stretches of the lakeshore free of human disturbance, with a negligible to minor benefit to eagles nesting on the park's large lakes.

*Impacts Related to Recreational Use* — Alternative 2 would result in the exclusion of all motorized use, including commercial fixed-wing aircraft, on all interior lakes in the park except Mukooda, where private fixed-wing aircraft use would be allowed. This would benefit any eagles occupying nests on interior lakes (one active nest currently).

Designating no-wake boating areas would eliminate loud noise related to motorboats from some of the back bays on the major lakes. This could reduce active disturbance, but may increase passive disturbance to eagle nests in the vicinity (see the impacts of alternative 1 and "Chapter 3: The Affected Environment"). It is unknown whether, on balance, no-wake areas would benefit or adversely affect eagles.

289

**Gray Wolf.** *Impacts Related to Park Management Policies* — No differences between policies described for alternative 1 (see page I–228) and this alternative are expected.

*Impacts Related to Overnight/Day Use* — No differences between policies described for alternative 1 and this alternative are expected.

*Impacts Related to Other Development* — Human access to wolf territory would be created through the construction of the Kabetogama–Ash River trail, which cuts across the territory of at least one wolf pack in the park. As described for the modified proposed action, assuming adequate ranger patrolling of the trail to ensure humans did not disturb wolves, the impact would be negligible or minor (see page I–260).

**Canada Lynx.** *Impacts Related to Park Management Policies* — No differences between policies described for alternative 1 (see page I–229) and this alternative are expected.

*Impacts Related to Overnight/Day Use* — No differences between policies described for alternative 1 and this alternative are expected.

*Impacts Related to Other Development* — Developing the Kabetogama–Ash River trail would have possible impacts to lynx by providing access to competitive species, as described for the modified proposed action (see page I–260). However, additional impacts from the presence of hikers in lynx habitat in warmer months associated with additional trails under the modified proposed action or alternative 1 would not occur if alternative 2 was selected. The impact from this alternative compared to alternative 1 is unknown and could be relatively beneficial or have negligible to moderate adverse impacts.

**Floating Marsh Marigold.** No impacts from any of the actions proposed in this alternative are expected to affect the floating marsh marigold.

**Lapland Buttercup.** As described for the modified proposed action, this species grows in the vicinity of Daley Bay. The Kabetogama–Ash River trail would be routed around the known population of the Lapland buttercup. Any additional populations of this or any other rare plant species found during trail construction would be noted, and the trail would be rerouted to avoid them (NPS 2000c).

**Northern Bog Lemming.** If this species is present in the park, it would occupy wetland habitat and an individual or family might be disturbed or displaced by the Kabetogama–Ash River trail. Site-specific surveys would be conducted before the trail was constructed to identify and avoid habitat used by this and any other protected species.

**Snapping Turtle.** Siting of the Kabetogama–Ash River trail could result in the disturbance or displacement of snapping turtles occupying open marsh. Effects to individual animals or those unable to find similar habitat would be severe, but effects to snapping turtles would be negligible parkwide.

**White Pelican.** No additional impacts beyond those described in alternative 1 would be expected. Some negligible impacts related to adding a source of slow-moving boats and passive disturbance to feeding pelicans might result from establishing no-wake boating areas.

### Cumulative Impacts

Cumulative impacts for bald eagles would be the same as those described for alternative 1 and the modified proposed action and include habitat loss, human disturbance and harassment, contamination through pesticides and other substances, water level fluctuations, and natural factors (see page I–230).

290

The synergistic effects of these factors have already resulted in lower than average reproductive success, a moderate impact on the park's eagles.

Wolves have experienced impacts from habitat loss, human disturbance, direct human-caused mortality, and natural causes.

Timber management, development, and the creation of roads and trails that favor competitors are cumulative forces that scientists believe have adversely affected Canada lynx.

### Conclusion

As described for the other alternatives, bald eagle productivity has apparently sustained moderate adverse impacts from a variety of sources, including intentional or inadvertent harassment by snowmobilers, toxins, and forces acting on their primary prey, fish. Productivity shows signs of improving. Alternative 2 includes the least lakeshore development and lowest potential for human disturbance from day use, overnight use, or speeding motorboats. The combination of these actions could have negligible to minor benefits for lakecountry eagles. It is not known whether no-wake boating areas would benefit or adversely affect eagles.

As described for the other alternatives, while wolves as a species have experienced major impacts, those in Minnesota and in the park appear to be faring well, as wolf densities in the park are comparable to other similar habitats. Constructing the Kabetogama–Ash River trail, as described for the modified proposed action, would have negligible or minor impacts on wolves using the area around Daley Bay. These impacts would not occur from human disturbance, but from creating access for humans into wolf territory, and possible inter-specific or intra-specific competition between wolves in different packs, or between wolves and coyotes.

The Kabetogama–Ash River trail could also provide access by coyotes and bobcats into territory otherwise occupied by lynx. These species are competitors with lynx, and coyotes prey on them as well. If lynx exist in the park, the trail could have an unknown adverse impact on them for these reasons.

Negligible impacts to feeding pelicans could result from no-wake boating areas, and negligible to severe localized and negligible parkwide impacts to snapping turtles and northern bog lemmings from building the Kabetogama–Ash River trail.

No impairment is anticipated to bald eagles, wolves, lynx, or other protected species from implementing the actions in alternative 2.

## CULTURAL RESOURCES

### ARCHEOLOGICAL RESOURCES

### Analysis

As described for the previous alternatives, regulatory cultural resource clearance would still occur on a project-by-project basis; however, the number of proposed sites to be developed, 250–275, is the lowest proposed of any alternative. The reduced number of existing and proposed developed sites under this alternative would be more manageable, given likely funding and staffing levels. While a reduced number of developed sites would be more manageable, the lack of alternative visitor destination and use sites would likely create minor localized impacts on existing sites as a result of intensive use or possible overuse.

Eliminating overnight visitor use in undeveloped areas would serve to significantly reduce visitor-related impacts and would be beneficial to both previously recorded and unrecorded sites. Limitations on party sizes for overnight use would help to slightly reduce visitor-related impacts and would be beneficial to archeological resources.

### Cumulative Impacts

As with alternative 1, given the park's mandatory compliance with federal legislation there is not a potential for major impacts resulting from development-related activities. While similar localized impacts resulting from visitor use are expected, the elimination of overnight use in undeveloped areas, along with slight limitations on party sizes for overnight use, would be expected to help reduce the overall number of localized impacts.

### Conclusion

Similar to alternative 1, the limited park identification and evaluation program would result in only negligible to minor impacts parkwide. The overall reduction in the number of sites developed, the elimination of overnight use at undeveloped areas, and limiting overnight use party sizes would be beneficial. Similar to the modified proposed action, limited access to sensitive archeological sites would also be beneficial in reducing the number of visitor-related impacts. While the types of localized impacts would be similar to alternative 1, the overall frequency would be significantly reduced. No impairment to archeological resources is anticipated from implementing alternative 2.

## HISTORIC STRUCTURES

### Analysis

Under this alternative as many historic properties as possible would be preserved so as to retain physical evidence of human occupation in the area. This would result in the retention and preservation of up to 47 properties with multiple structures. Previously identified ruins would also be protected as important landscape features and allowed to molder. The preservation of structures would be the focus as opposed to visitor access. This alternative would be the most beneficial, as all currently eligible and potentially eligible structures would be retained and managed. Existing cultural resource visitor destinations would also continue to be maintained and public access provided. Additional cultural resource sites would be developed, but preservation would be a top priority. Access to cultural resources sites would be limited with access to other sites determined on the same basis as those under the modified proposed action. The management of these properties would also focus on working with others to highlight the connections between the park's cultural resources and those in the local, regional, and state area, with specific decisions on properties based on information that would be developed in subsequent implementation plans. The park would continue to use historic properties for park operations and interpretation; however, an emphasis would be placed on preservation over reuse. This alternative would also be the most beneficial to structures, as this would significantly reduce the number of moderate localized impacts resulting from the rehabilitation of individual buildings. Public/private partnerships to manage historic properties would also be pursued, similar to the modified proposed action.

### Cumulative Impacts

Similar to the previous alternatives, actions under this alternative would be accomplished pursuant to federal legislation, with no major impacts anticipated. However, the emphasis on preservation over reuse would significantly reduce the frequency of localized impacts resulting from individual rehabilitation projects and visitor-related uses.

### Conclusion

This alternative would result in a more focused approach to the management of historic structures, with emphasis on preservation over visitor use, interpretation, or adaptive reuse. Though standing structures would suffer less visitor-related impacts, there would also be less opportunity for visitor education and appreciation. This alternative would result in the preservation of a significantly higher number of historic properties and would accomplish this through a greater variety of partnerships and alternatives. Emphasizing preservation over reuse would also significantly reduce the number of moderate localized impacts stemming from individual rehabilitation projects. No impairment to historic structures is anticipated from implementing alternative 2.

## CULTURAL LANDSCAPES

### Analysis

As with the modified proposed action, increased maintenance, monitoring, and interpretation of cultural landscapes would be beneficial for both their long-term preservation and for public education and appreciation. Cultural landscape reports would be completed for all eligible landscapes under this alternative and would provide much needed guidance for the park in protecting landscapes and managing visitor use and development in these areas. Additionally, the emphasis on less visitor development and on preservation would benefit both individual landscape features and viewsheds.

### Cumulative Impacts

Similar to the previous alternatives, the waterway transportation system of the voyageurs, along with its portages, forested uplands, rocky shorelines, and other geographic features, is part of a larger cultural landscape of the fur trade. Park legislation and this alternative would provide for vegetation management to reestablish an environment that more closely resembles that present during the time of the fur trade. While this would create a cultural landscape of the fur trade. it would have impacts on landscapes associated with historic activities occurring after the fur trade period. Some specific landscape features, such as earthen embankments that indicate the presence of historic logging camps, would be protected through localized vegetation control, but the larger landscapes they are associated with would be reclaimed by vegetation.

### Conclusion

Better overall management of cultural landscapes through increased maintenance and monitoring would be beneficial parkwide. The emphasis on preservation over development would help ensure that landscapes retained their integrity and setting for future generations. No impairment to cultural landscapes is anticipated from implementing alternative 2.

## COLLECTIONS

### Analysis

The park's collections program would be similar to the modified proposed action and focus on acquiring and properly curating only those objects relevant to the park's history. This collections

293

management approach would be the most beneficial and responsible, as it would focus acquisition efforts and allow for increased access to collections through various media such as the Internet, publications, and exhibits.

#### Cumulative Impacts

As with the modified proposed action, given the park's mandatory compliance with federal curation regulations, no cumulative impacts are anticipated.

#### Conclusion

Similar to the modified proposed action, new acquisitions would proceed at a more manageable rate commensurate with park resources to properly record and curate objects. Increased access to collections would also be beneficial in allowing for further research and dissemination of information, as well as creating support and awareness among the public for the importance of collections. No impairment to collections is anticipated from implementing alternative 2.

### ETHNOGRAPHIC RESOURCES

The impacts would be the same as described for alternative 1 (see page I–236). No impairment to ethnographic resources is anticipated from implementing alternative 2.

## IMPACTS ON THE VISITOR EXPERIENCE — FIRE MANAGEMENT

### ANALYSIS

As described for alternative 1 and the modified proposed action, fire management (suppression, prescribed burning, and fire use) could temporarily inconvenience visitors because of smoke and site or area closures. This could occur to a greater degree under this alternative because wildland fire and prescribed fire would be used to the greatest extent possible to restore the natural fire regime. Nevertheless, during the planning process for prescribed burns, impacts on visitor use areas could be eliminated or reduced by selecting wind directions that would ensure that smoke would not be targeted to these areas. Through planning, public notification, and education, fire management activities at Voyageurs could inconvenience visitors but would have little effect on impairing visitor experiences.

### CONCLUSION

Fire management activities at Voyageurs could inconvenience visitors possibly to a greater degree under this alternative but would have little effect on impairing visitor experiences.

## IMPACTS ON THE VISITOR EXPERIENCE — VISITOR USE AND FACILITIES

### ANALYSIS

#### Parkwide Management

**Entry Fees / Facility Use Fees.** Establishing an entry/user fee system following general management plan approval would allow the park to immediately begin collecting visitor use data and to secure funding for programs, facilities, and operations. The requirement to pay and obtain an entry permit might discourage use by some visitors.

294

**Overnight Permit System.** Implementing an overnight permit system directly after plan approval would provide less time to prepare and implement a viable and appropriate visitor management system. However, establishing a permit system for overnight use would ensure a more organized and pleasant trip for users. Costs associated with acquiring a permit might discourage use by some visitors, but it would likely curtail the practice of blocking sites from being used several days before they were actually occupied, the same as the modified proposed action. A system would allow the park to manage overnight use and contact visitors about park rules and conditions prior to overnight use. This would help ensure a safe and pleasant visitor experience.

**Monitoring Programs.** Establishing a comprehensive monitoring program would result in the adequate collection of park data, thus enhancing the visitor experience, the same as the modified proposed action.

### Water Management Areas

**Integrated Uses.** Under alternative 2 designating no-wake boating areas would ensure slow boating activity in some areas and should help reduce conflicts between boaters. Such designations could potentially encourage more nonmotorized boat use. Some motorized users would not like that this additional regulation had been added to specific areas.

**Overnight Houseboat Use.** Under alternative 2 a permit system would allow 50 overnight houseboats per basin (a park total of 100) and would help ensure a future balance of in-water recreational uses. This quota would go into effect following plan approval, and limited concession contracts with the four existing houseboat companies would be established. The quota would allot 10 permits for private use and 40 permits for commercial use (rental) per basin, the least of all alternatives.

Use limits would generate some adverse impacts to the visitor experience for those who participate in houseboating, particularly if levels of participation were to increase in the future. Houseboat users, especially those who own private watercraft, might find it difficult at times to obtain permits, particularly during peak periods. Houseboat users might need to plan well in advance to ensure they could obtain a commercial houseboat or a private permit.

Since houseboats would not dominate in-water uses, positive impacts to the experience of other park visitors would occur.

**Fixed-Wing Aircraft.** Eliminating all commercial and most private fixed-wing aircraft use on interior lakes (except Mukooda) would limit options for a small percentage of visitors who require or use this means of travel to primitive and lakecountry areas.

**Boats on Interior Lakes.** Eliminating the boats-on-interior-lakes program would discourage backcountry travel for a small percentage of visitors who access the interior lakes, and an existing visitor benefit would no longer be available. Visitors desiring a backcountry experience on interior lakes would be required to portage canoes. NPS funding and management of the program could be redirected to benefit other visitor programs.

**Snowmobiles.** Snowmobile users would continue to have access to the same trail system as under alternative 1.

**Special Use Zone.** The impacts would be similar to alternative 1. Even though the special use zone would be removed in this alternative, people could continue to apply to the park for special use permits, and if they met the park's management policies, they could obtain such a permit. Continuing to prohibit radar runs would inconvenience a few people.

## Land Management Areas

### *Developed Area*

**Visitor Centers.** Year-round operations at all visitor centers and the development of a multi-agency center at Crane Lake would expand opportunities for visitor contact and interpretive programs. Under this alternative, minimal building and facility expansion would occur, and outdoor exhibits and seasonal facilities would be provided, the same as the modified proposed action. Improved facilities and operations would generate major benefits for park users over the long term.

**Parking.** Through partnering with others for additional parking and shuttle services, visitor benefits would be provided, the same as the modified proposed action.

**Boat Launches.** Visitor experiences would be improved by providing separate launches for motorized and nonmotorized watercraft, the same as the modified proposed action.

**Bicycle/Pedestrian Facilities.** Designating signed bike routes on the Rainy Lake and Ash River access roads would minimally improve safety and visitor experiences for visitors enjoying nonmotorized uses. It could also encourage additional bike use.

### *Lakecountry Area*

**Day and Overnight Use Sites.** Under alternative 2 an additional 36–61 day and overnight use sites could be developed (250–275 total), but fewer overnight visitors would be accommodated than under the other alternatives. Full development would include 145 tent campsites, 80 houseboat sites, 17 traditional day use sites, and 10–15 visitor day use destination sites. Approximately 20% of the lakecountry areas would be developed as high density (subarea 1), slightly less than the modified proposed action and the least of all alternatives. This level of development would disperse visitors to the greatest degree of all alternatives, helping maintain qualities of privacy and separation, and providing a favorable experience. A permit or reservation system would assure visitors of being able to secure a developed overnight use site, resulting in moderate benefits for visitors. However, visitors would no longer be able to enjoy the same degree of spontaneity and freedom that currently exists in selecting an overnight use site. During peak seasons of use visitors could encounter more difficulty than under any of the alternatives in acquiring a permit to use an overnight site.

Campsites designated only for paddlers (canoeists and kayakers) would ensure well-sited overnight facilities for a limited number of nonmotorized watercraft users. This could encourage greater participation in nonmotorized forms of boating. However, a few motorized users might feel they were being excluded.

A maximum party size limit of 18 people would exclude larger groups desiring to camp overnight at one site in the park, resulting in a negligible adverse impact parkwide. Group campsites would not be provided in the park, thereby minimizing options for a minor percentage of overnight use. However, partnerships would be developed with other entities to ensure that a range of group campsites would be provided outside the park, benefiting these users.

**Day Use.** Visitors would be moderately and adversely affected by eliminating day use at overnight sites. As a result, the use of undeveloped sites for day use (without fires) would likely increase. Negative impacts to day users should be minimized since the development of day use sites would be a high priority. Eliminating day use at tent and houseboat sites would reduce site-use conflicts, and overnight visitors would be assured of being able to locate and use a tent or houseboat site during any time of the day if they had a reservation.

**Use of Undeveloped Sites.** Under alternative 2 restricting all overnight use only to developed sites would ensure that overnight users were dispersed throughout the park, allowing more efficient management of overnight use. Inconveniences would be created for overnight visitors who prefer and are accustomed to using undeveloped sites. This would reduce the spontaneity and freedom for campsite selection that visitors currently enjoy. Park users might need to plan in advance to secure an overnight site during peak seasons of visitation.

**Fires and Firewood.** Localized adverse impacts to the visitor experience would occur by limiting fires to metal fire rings at developed sites. However, over the long term adverse impacts to visitor experiences would become less, because more day use sites would be constructed, the same as the modified proposed action.

Prohibiting the gathering of dead and down firewood would generate the greatest positive impacts to the visitor experience by helping maintain the quality of camping environments, yet would inconvenience visitors who arrived without firewood or liquid fuel campstoves. Cut wood available for purchase would help reduce adverse impacts to resources, the same as the modified proposed action.

**Visitor Destination Sites.** Cultural and natural history interpretation would be expanded by developing 10–15 additional visitor destination sites, less than the modified proposed action and alternative 3, but greater than alternative 1. Participation levels in site-specific educational programs and exhibits would increase, thereby generating benefits for visitors.

### *Backcountry Trail Areas*

**Summer Trails.** An expanded nonmotorized trail system that includes about 33 additional miles of summer hiking trails that comprise the Kabetogama–Ash River trail system (inside and outside the park) would be a moderate to major benefit to the visitor experience, but would provide the least extensive trail of all alternatives. However, not expanding the trail system on the Kabetogama Peninsula would not provide visitors with additional paths in the interior of the park. This would, however, allow greater opportunities for a primitive area experience.

**Winter Trails.** The additional ~26 miles of nonmotorized trails of the Kabetogama–Ash River trail system would benefit winter recreationists, the same as the modified proposed action.

### *Primitive Areas*

**Camping.** At-large camping in primitive areas would not be permitted, adversely impacting the small percentage of users seeking primitive areas for overnight use.

## CUMULATIVE IMPACTS

Impacts would be the same as for the modified proposed action (see page I–269).

## CONCLUSION

The need to obtain an overnight permit/reservation would inconvenience some users, and permit costs might discourage use by some visitors. Improved collection of visitor data with an entry and overnight user fee/permit/reservation system would make available the most comprehensive visitor use data of any alternative. As a result, management decisions could more appropriately respond to visitor needs, thus improving the visitor experience over the long term.

Through a permit system, a quota of 50 overnight houseboats per basin (a park total of 100) would help ensure future balanced in-water uses, but slightly reduce existing commercial use and possibly private use, with the least houseboat use of any alternative. Use limits would generate some adverse impacts to the visitor experience parkwide for houseboaters, particularly if use levels increased in the future. Houseboat users, especially those who own private watercraft, might find it difficult to obtain permits, especially during peak periods. Since houseboats would not dominate in-water uses, the experiences of other park visitors could improve.

Eliminating all commercial and most private fixed-wing aircraft use on interior lakes (except Mukooda) would limit options for a small percentage of visitors.

Even though the special use zone would be removed in this alternative, people could apply for special use permits, as long as they met the park's management policies.

Year-round operations at all visitor centers, minimal expansion of outdoor facilities at Kabetogama Lake and Ash River, and a multi-agency visitor center at Crane Lake would benefit the visitor experience and provide greater access to information and programs more than any other alternative. Through partnering with others for additional parking and shuttle service, visitor benefits would occur, the same as the modified proposed action.

Developing an additional 36–61 day and overnight use sites (250–275 total), with only 20% of the shoreline at high density (subarea 1), and restricting all overnight camping and houseboat mooring to developed sites, would accommodate the fewest number of overnight visitors over the long term. Day use visitors would be adversely affected to a moderate degree by eliminating day use at overnight sites. Fewer overnight and day use options would inconvenience visitors, who would need to reserve sites, but adverse impacts to the visitor experience as a result of activity, noise, and social encounters would be the least of any alternative. However, the level of spontaneity and freedom in site selection that best suits the needs of visitors would be diminished under this alternative.

Localized adverse impacts to the visitor experience by limiting fires to metal fire rings at developed sites would be the same as the modified proposed action. Prohibiting the gathering of dead and down firewood would generate the greatest positive impacts to the visitor experience by helping retain quality campsite environment; a few visitors who came without firewood or liquid fuel campstoves would be inconvenienced. Cut wood available for purchase near the park would benefit visitors, the same as the modified proposed action.

Developing 10–15 visitor destinations would afford opportunities to interpret park resources, with more benefits than alternative 1, but less than the other alternatives.

An expanded nonmotorized trail system that includes an additional 33 miles of summer hiking trails and 26 miles of winter trails on the Kabetogama–Ash River trail system would be a major benefit to visitors. However, additional paths on the Kabetogama Peninsula would not be constructed, providing visitors with less access to interior areas of the park, but allowing greater opportunities for a primitive area experience. This alternative would provide the fewest hiking options of any alternative.

Despite some adverse impacts to the visitor experience as a result of restricting overnight use to developed sites, reducing the total number of constructed day and overnight sites, and establishing a 50-houseboat permit limit per basin, no impairment to the visitor experience is anticipated from implementing the actions in alternative 2.

## VISITOR EXPERIENCE — NOISE AND REMOTENESS

### ANALYSIS

#### Motorized Uses

Designating no-wake boating areas on the four major lakes would provide visitors with more opportunities for finding quiet areas than any other alternative. Eliminating commercial fixed-wing aircraft and private fixed-wing aircraft use on all interior lakes (except Mukooda) would allow for the greatest degree of natural quiet and feelings of remoteness throughout primitive areas of the park of any alternative.

#### Nonmotorized Uses

The proposed Kabetogama–Ash River trail would provide for quieter and safer nonmotorized uses during the summer and winter (the same as the modified proposed action).

#### Visitor Use of Day/Overnight Sites

Providing a total of 250–275 day use and overnight use sites would only generate minor impacts to natural quiet and a feeling of remoteness in the park. Restricting overnight tent camping and houseboat mooring to developed sites would help retain natural quiet in the lakecountry and interior areas.

Noise impacts related to overnight use would be the least of any alternative since the fewest number of developed sites are proposed and the use of undeveloped sites would not be permitted. A lack of group campsites would eliminate the potential for noise from large groups.

### CUMULATIVE IMPACTS

No cumulative impacts have been identified.

### CONCLUSION

Designating no-wake boating areas and eliminating motorized use on seven interior lakes (except Mukooda) would generate positive localized impacts to qualities of remoteness and seclusion for a small percentage of visitors, but negligible benefits to the visitor experience parkwide. Providing a total of 250–275 day and overnight sites, restricting use to developed sites, and limiting party sizes (18 persons maximum) would result in major benefits to the natural quiet and feelings of remoteness, the most of any alternative.

## VISITOR EXPERIENCE — SAFETY

### ANALYSIS

Impacts related to visitor contact and outreach educational programs (i.e., reduced conflicts and increased safety) would be the same as for the modified proposed action.

Impacts related to increased safety by relocating the Moose Bay snowmobile trail/portage and Mukooda Lake snowmobile trails would be the same as for the modified proposed action.

### CUMULATIVE IMPACTS

No cumulative effects have been identified.

### CONCLUSION

Visitor benefits resulting from expanded opportunities for education related to boating etiquette and safety, and also from improved snowmobile trails/portages, would be the same as modified proposed action.

## VISITOR EXPERIENCE — CONCESSIONS

### ANALYSIS

Concession operations would provide desirable services for park visitors, and tour boats would provide opportunities for visitors without boats to experience the park, the same as alternative 1. Eliminating the Mukooda Lake boat rental would create an adverse localized impact for the small percentage of visitors who use this service but would be negligible parkwide.

### CUMULATIVE IMPACTS

Concessioners would continue to add to the visitor experience by providing boat tours, dining, and lodging services.

### CONCLUSION

Continuing park tour boat concession contracts and dining/lodging contracts at Kettle Falls would benefit park visitors and the National Park Service, the same as the modified proposed action.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

### ANALYSIS

#### Visitor Centers and Operations

Assistance and visitor contact from park staff through interpretive programs and outreach programs would be improved to the greatest degree of all alternatives through year-round operations at all visitor centers.

As described for the modified proposed action, developing a multi-agency visitor center at Crane Lake would provide adequate space and service for visitors. Additional temporary structures and seasonal outdoor interpretive facilities at the Ash River and Kabetogama Lake visitor centers would enhance educational opportunities for visitors.

#### Interpretive Programs, Publications, Projects, and Education

Developing a comprehensive interpretive plan focusing on the park's mission, purpose, and significance would enhance opportunities for visitors to navigate and understand historic trade of the voyageurs. Programs tailored to better address visitor needs would allow visitors to more easily immerse themselves in experiencing the park, the same as the modified proposed action. However, under this alternative focusing on critical resource issues would provide visitors with an understanding of current park concerns, possibly as the expense of comprehensive interpretation.

With increased staffing and funding, the backlog of visitor orientation, information, and safety messages would be addressed, providing greater benefits to visitors (the same as the modified proposed action).

Educational and outreach programs would be expanded, on-site opportunities for education would be augmented, and overall participation in interpretive programs would likely increase, as described for the modified proposed action.

#### Educational Institute

Developing an educational institute would generate benefits as described for the modified proposed action (see page I–273).

### CUMULATIVE IMPACTS

Cumulative impacts would be the same as described for the modified proposed action, except visitor contact opportunities would be the greatest through year-round operations at all visitor centers. These facilities and additional staffing would promote greater regional and national interest in resources of the park and neighboring areas.

### CONCLUSION

Park contact and information dissemination would be improved by providing year-round operations at visitor centers, developing an educational institute, cooperatively providing a multi-agency center at Crane Lake, and adding staff and funding. Benefits to visitors would be slightly greater than under alternative 1. Limiting the interpretive focus to critical resource issues would educate visitors about specific park concerns, possibly at the expense of emphasizing the broad range of interpretive themes.

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

### STAFFING

#### Analysis

Impacts on staffing would be similar to the modified proposed action. Additional staff would be needed to conduct feasibility studies, implement recommended programs, enforce new rules, operate the Crane Lake visitor center, and expand interpretation and resource management programs. Additional staffing and funding would improve the efficiency of most areas of park operations — visitor services, maintenance, and resource management — thus enhancing the visitor experience and the protection of natural and cultural resources. Approximately 28 full-time equivalent and 22 seasonal positions would be added over time; some positions would be funded through fee collections. Some staff would experience a moderate increase in workload as actions are implemented.

#### Conclusion

Developing additional facilities, conducting regular monitoring, expanding programs, implementing a no-fee permit system for overnight use, and potentially establishing entry/user fees would result in

301

major increases in staff responsibilities. However, additional staffing would improve the efficiency of park operations, and mitigate adverse impacts to park operational workloads.

## NPS OPERATIONS AND FACILITIES

### Analysis

Impacts on NPS facilities would be the same as those described for the modified proposed action. A development plan for Namakan District operations would improve the efficiency of operations and the use of existing space, which would be a positive impact. The proposed multi-agency visitor center at Crane Lake would expand park facilities and require support services. Visitor services and resource protection would increase as a result of this action. Plans for an NPS workstation at Kettle Falls would provide work space for employees, which would improve services to the area, allow more visitor contact, facilitate programming, and provide greater protection for park resources. Using historic cabins for park housing would help alleviate the strain on current park housing, but would most likely require water transportation because of location. These accommodatious would be remote without modern conveniences.

### Cumulative Impacts

No new employee housing would be provided in the park. Providing additional employee housing through an outside partnership would generate positive impacts for seasonal park staff seeking short-term housing (the same as the modified proposed action).

### Conclusion

Work and storage facility improvements would result in positive impacts to park operations, the same as the modified proposed action.

## PARTNERSHIPS

### Analysis

As described for alternative 1, the National Park Service would continue its current partnerships for safety, natural and cultural resource research, promotion, and maintenance, thus supporting park operations and resource protection. As described for the modified proposed action, closer cooperation with the Minnesota Department of Natural Resources and the cooperative development of a fisheries management plan would facilitate unified management programs and lead to enhanced natural fisheries in the park. Also, the pursuit of additional cultural resources partnerships would increase the means and number of people available to conduct treatment and maintenance actions, as well as develop cultural resources for visitor use.

Active NPS participation in and support of planning, zoning, and other land use activities that protect park viewsheds and what visitors value about the park would positively affect the visitor experience, the same as the modified proposed action. A partnership for a recreational vehicle campground outside the park with lake access would increase the opportunities for visitors who do not have a boat to use the park, the same as the modified proposed action.

**Cumulative Impacts**

As described for the modified proposed action, an increased effort to expand partnerships would take more time and energy, but the effort would benefit the ability of park and regional managers to protect resources, provide quality visitor services, and build trust between constituents.

**Conclusion**

As described for the modified proposed action, expanded partnerships and cooperation with various public and private organizations would afford greater opportunities to utilize the expertise of resource managers, recreation specialists, and service providers. Increased communications between the park and neighboring land managers would afford greater potential for developing common strategies for resource protection and recreational opportunities.

## SOCIAL AND ECONONIC ENVIRONMENT

### ANALYSIS

**Parkwide Management**

Establishing natural fire regimes could increase the risk of being unable to use the park without inconvenience. This could adversely impact the number of visitors choosing Voyageurs as a destination. The extent of the inconvenience could also reduce the time that visitors spent in the park and surrounding communities if the burns reduced the number of activities that participants had available. These reductions would have an adverse impact on the local economy.

Developing 10–15 visitor day use destinations would increase the potential for extended stays in the area and attract new user groups, positively impacting the surrounding community. However, this impact would be less than under the modified proposed action.

Partnering with others to interpret cultural resources would add another destination image to Voyageurs National Park and potentially attract new user groups. The cooperative nature of this program would improve relations between the community and the park.

Construction expenditures by the park would provide a positive impact to the local economy to the extent that goods and services were purchased locally.

**Visitor Use and Facilities**

***Parkwide Management***

Instituting a fee structure would have a short-term adverse impact on the number of visitors, resulting in a reduction in tourist spending. The duration of the impact would vary, depending on the amount and structure of the fee.

Creating a comprehensive program of exhibits, displays, publications, and other educational tools would help foster tourism and aid the businesses in the gateway communities, the same as the modified proposed action.

### *Water Management Areas*

**Commercial Houseboats.** Limiting the number of overnight commercial houseboats allowed in the park to 40 per basin (rather than the current unlimited number) could adversely affect the commercial houseboat providers since there are 45 available for rent in the Rainy basin and 55 in the Namakan basin. Therefore, some adverse economic impact is likely on commercial houseboat providers.

The current fleet of 100 commercial houseboats is 20 more than would be allowed under this alternative. The houseboat industry would have an oversupply of 20 boats and might feel compelled to sell some boats. This sale would adversely affect the houseboat industry and decrease total lodging options in the area.

Because of the high user-group expenditures for houseboating, the economic impact of this change would be disproportionate and greater than the number of users affected. Revenues generated by the commercial houseboat users, a minimum of $1,000 to $5,000 per group, are greater than the per-group average expenditure of $176 in the park and $432 outside the park (Littlejohn 1998).

Based on reasonable assumptions about "pillow" capacity in offsite lodging, the reduction of 20 houseboats would reduce total lodging in the area by only 2%. If the adjustment occurred in the Ash River or Crane Lake area, there would be as much as a 5% reduction in overnight capacity. Crane Lake and Ash River are areas of relative low income in the region. Consequently, impacts to the houseboat industry in these communities might result in an inequitable distribution of economic risks there.

**Private Houseboats.** Limiting the number of private houseboats to 10 per basin might be a reduction from the present peak demand, although it is unknown how may private (or commercial) houseboats are currently used in the park at peak times. If this limitation resulted in fewer private houseboats in the park, there could be an adverse economic impact on local businesses that supply goods and services to those users. However, that impact would not be significant on the overall economy of the gateway communities.

Distinguishing between commercial and private houseboats under reduced access scenarios might have an adverse impact on community cohesion and relations between the community and the park as it would set up public versus private competition for a potentially scarce resource.

**Fixed-Wing Aircraft.** A significant reduction of areas for fixed-wing aircraft operation within the park would reduce visitor access to some areas and eliminate some users who access the park by private fixed-wing aircraft. This would have an adverse affect on visitor expenditures in the area and on the local economy.

Fixed-wing aircraft have been used in this location since before it became a national park. Thus, eliminating fixed-wing aircraft would cause community controversy and have an adverse effect on relations between the community and the park.

### *Land Management Areas*

**Developed Area.** Actions that would have positive effects on the local economy both during construction and after completion include developing separate boat launches for motorized and nonmotorized watercraft, and developing visitor destination day use sites. These actions would provide a broader range of services that could attract more visitors, make park access easier, and provide additional points of interest to retain visitors for a longer period of time.

There would be an adverse economic impact from (1) implementing fire management policies; (2) limiting the number of overnight houseboats; (3) providing the fewest developed day and overnight use sites; and (4) discontinuing group camping, motorized use (including fixed-wing aircraft use) on interior lakes (except Mukooda Lake), the boats-on-interior lakes program, overnight use at undeveloped sites, and at-large camping in primitive areas.

The net positive and negative effect in the shift of facilities and focus provided by these actions cannot be determined. In general, the actions would reduce the number of overnight opportunities for the visitor group with the highest spending.

Cooperative action to develop off-site parking facilities would have a positive impact on community cohesion and relations between the community and the park.

**Backcountry Trail Area.** Expanding the backcountry trail system would have no adverse impact on existing users. Rather, it would potentially attract more and different hikers and skiers, resulting in increased local spending.

Working with partners to develop joint facilities would improve relations between the community and the park.

**Primitive Area.** Discontinuing at-large camping in primitive areas would have an insignificant economic impact.

### Visitor Education, and Interpretation, and Services

#### *Parkwide Management*

Impacts of creating an educational partnership with local communities would be the same as described for the modified proposed action.

The proposed interpretive changes would have both positive and negative implications for visitor experiences, and the general direction of the changes could not be determined. Expanding the interpretive program would retain visitors longer, but reduced access to parts of the park could reduce the number of visitors.

#### *Water Management Areas*

Creating a water-based historic trail and self-guided tour would both attract new visitors and extend visitor stays. This would have a positive impact on local economies.

### Park Operations, Facilities, and Partnerships

This alternative would result in the same economic and social effects as the modified proposed action (see page I–277).

### CUMULATIVE IMPACTS

Partnering with others to cooperatively interpret cultural resources would add another destination image to Voyageurs and attract new user groups. The cooperative nature of this program would improve community relations between the community and the park. Working with partners to develop cooperative facilities in the backcountry would have a positive impact on both relations between the community and the park and on destination marketing. Creating an educational institute in partnership with local communities and others would attract new visitors, while enhancing the destination image of the park. It would also increase community cohesion and improve community facilities, enhancing relations between the community and the park.

### CONCLUSION

Creating a comprehensive program of exhibits, displays, publications and educational tools would foster tourism and aid businesses, with a slight positive effect on the area's economy and community relations (the same as the modified proposed action).

Some negative effects on the region's economy could result if park usage was reduced somewhat by implementing fire management policies; limiting the number of overnight houseboats; providing the fewest developed day and overnight use sites; and discontinuing group camping, motorized use (including fixed-wing aircraft use) on interior lakes (except Mukooda Lake), the boats-on-interior lakes program, overnight use at undeveloped sites, and at-large camping in primitive areas. Some positive economic and social effects would result from improved educational facilities and programs, separated boat launches, expanded developed sites and visitor destinations (the same as the modified proposed action). Quotas for commercial and private houseboats might have an adverse impact on community cohesion. User fees are not expected to have a measurable effect on the regional economy after the first two years.

## UNAVOIDABLE ADVERSE IMPACTS

The types of unavoidable impacts to natural resources under alternative 2 would be the same as those described for alternative 1, except that small amounts of wetland vegetation could be removed through the creation of paddle-in sites. Designating no-wake boating areas could mitigate this loss of shoreline vegetation on the park's large lakes by reducing removal from wave action.

No unavoidable adverse impacts on cultural resources are anticipated.

Visitors would need to plan well in advance in order to stay overnight in the park during peak times since the fewest number of overnight sites would be developed of any alternative; overnight users would be required to use only developed sites; group campgrounds would be eliminated; and the fewest number of houseboats would be allowed to stay overnight. The few visitors who use fixed-wing aircraft for access to the currently accessible interior lakes (except Mukooda Lake) would be inconvenienced since fixed-winged aircraft would be prohibited on these lakes. Visitors would have the fewest hiking options on the Kabetogama Peninsula of any of the alternatives.

## LOSS IN LONG-TERM AVAILABILITY OR PRODUCTIVITY TO ACHIEVE SHORT-TERM GAIN

Losses in long-term productivity would be the same as those described for alternative 1, with the following exceptions. The degradation or loss of wildlife habitat or vegetation by providing access to otherwise undisturbed areas as a result of undeveloped areas being used for overnight camping would not occur, and the long-term productivity of these sites might be returned through restoration. Discontinuing the boats-on-interior-lakes program could return long-term productivity to wildlife on those lakes, particularly loons.

The emphasis on the preservation of cultural resources would significantly improve the relative availability of cultural resource sites for future interpretation and development.

## IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

The same resources as those described under alternative 1 would be committed, with the following exceptions. The compaction of soils or the trampling of vegetation and the subsequent loss of wildlife habitat in undeveloped areas used by overnight visitors would be changed from irreversible to irretrievable through restoration. Allowing motorboats and snowmobiles to use the park's large lakes appears to have resulted in irretrievable losses of overhanging bank habitat and wildlife habitat for those species sensitive to noise. Designating no-wake boating areas could eventually return some shoreline to use by aquatic vegetation or wildlife, but slow-moving boats could disturb wildlife enough that reproductive success would be lowered.

## CONSISTENCY WITH NEPA SECTIONS 101 AND 102 (1)

As noted for alternative 1, section 101 of the National Environmental Policy Act indicates agencies should do the following:

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable or unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The National Park Service now requires that each alternative be compared to these criteria to see the degree to which they are met. As noted for alternative 1, all of the information needed for this comparison is available in the preceding three summary sections (beginning with "Unavoidable Adverse Impacts"). For instance, the section on long-term productivity and short-term gain explains which resources might be lost to achieve the recreational use of the park under alternative 2, and it encompasses criteria 1 and 5 above. Criteria 2 and 4 (and to some extent criterion 3) speak to the quality of the environment. Some impacts are unavoidable, however, and these are summarized under the heading "Unavoidable Adverse Impacts." Criteria 3 and 6 deal with sustainability and the loss of resources, which are very similar to irreversible or irretrievable commitments of resources.

Section 102 (1) of NEPA asks that agencies administer their own plans, regulations and laws so that they are consistent with the policies outlined above to the fullest extent possible.

Alternative 2 best responds to criteria that ask parks to maintain the highest quality natural environment (i.e., criteria 1, 2, and 6). It has the least development of campsites, visitor centers, and other facilities, resulting in the least impact from these activities to soils, vegetation, wildlife, archeological resources, etc. of the four alternatives analyzed. Restricting overnight tent camping to developed sites only could have substantial benefits for wildlife and vegetation. This alternative would discontinue motorized use on interior lakes and the boats-on-interior-lakes program, which would result in benefits for wildlife, but which might discourage some backcountry use. It would also limit the number of houseboats to 50 per basin; this would affect houseboat users in the near future who might not be able to obtain a permit.

Although imposing limits on motorized use and eliminating the boats-on-interior-lakes program mean this alternative does not compare as well as the modified proposed action to existing practices with regard to criteria 3, 4, and 5 in promoting a wide range of uses, alternative 2 would include the Kabetogama–Ash River trail for hiking and skiing, plus boat launches, bike and pedestrian facilities, and campsites for canoeists and kayakers. It also would provide a high-quality experience for lakeside visitors seeking solitude. This means it would meet criteria 3, 4, and 5 better than alternative 1. However, since most of these additions for user groups would also occur under the modified proposed action, the modified proposed action would meet these criteria to a greater extent than alternative 2.

# IMPACTS OF ALTERNATIVE 3

## NATURAL RESOURCES

### AIR QUALITY

#### Analysis

Impacts to air quality under alternative 3 would be similar to those under all other alternatives and would be confined primarily to emissions from motorized equipment used in the development of trails, additional campsites, and additional visitor facilities. Commercial fixed-wing aircraft takeoffs and landings from the developed area of Lake Kabetogama would add a negligible overall, but possibly major, intermittent and localized amount of pollutants characteristic of mobile sources (such as hydrocarbons and carbon monoxide).

#### Cumulative Impacts

No changes in the cumulative impacts from actions inside or outside the park to those described for alternative 1 (see page I–204) are expected under alternative 3.

#### Conclusion

Cumulative impacts to visibility, ozone, mercury and particulates would be the same as those described in all other alternatives. Commercial fixed-wing aircraft use Kabetogama Lake would add negligible overall, but possibly major, intermittent localized amounts of pollutants typical of mobile sources. No impairment of park air quality is anticipated as a result of implementing actions in alternative 3.

### SOILS

#### Analysis

**Impacts Related to Overnight/Day Use Sites.** Alternative 3 would eventually result in about 400 developed sites. The distribution of sites would be similar to alternative 1, with slightly more houseboat sites, 27 fewer tent campsites, 20 paddle-in sites, and 15–20 visitor destination day use sites. However, under this alternative party size restrictions and firewood collecting rules would be enforced, and tent campers would not be allowed to camp at undeveloped sites. Houseboat mooring and day use would continue at undeveloped sites. Fees for overnight use would be collected, but only a certain number of developed sites would be reserved. Others would be available on a first-come, first-served basis. Primitive area campers, up to a maximum of six people per site, would be allowed to camp at large. Two new 4- to 5-acre campgrounds are proposed under this alternative, one in the Kettle Falls area and one near the western end of Sullivan Bay. Monitoring developed lakecountry sites, along with restoring or closing badly damaged or overused developed sites, is also part of this alternative. Undeveloped sites would be closed to tent camping, but not restored.

At the time the 1988 *Lakecountry and Backcountry Site Management Plan* was approved, it was unclear whether a total of 400 sites could be developed if resource protection and other criteria were applied. This is one reason fewer tent sites would be built and more destination day use, houseboat, and paddle-in sites would be added. Access, latrine potential, or other restrictions might not apply in citing some of these types of sites; however, impacts to soils would likely be similar to other types of sites.

As noted in the other alternatives, impacts to soils and other resources from overnight camping or day use comes primarily from four sources — (1) physical characteristics of existing sites, (2) campers exceeding the capacity of the site, (3) a lack of knowledge or concern of minimal impact camping practices, and (4) wood-gathering practices (Larsen et al. 1999). Educating visitors when they paid a fee for overnight use would help control party size and resulting damage to the core sites, social trails, or other trampling of vegetation at developed sites. Since this alternative would allow about the same number of new developed sites as alternative 1, the difference in core sizes between these new sites with party size limits enforced and those in alternative 1 would be about 25–30% (assuming core sizes of new sites remain at about 50 sq m), or a major localized benefit to soils.

Confining tent campers to developed sites would keep them away from areas that could not meet resource protection criteria. Although houseboats and day use visitors would continue to use undeveloped sites, it is likely that many areas would remain relatively unused and undisturbed. This is a potential moderate to major localized benefit to soils compared to alternative 1, and a negligible benefit to soils parkwide.

Restoring excessively damaged developed sites would ensure that erosion and compaction on these sites did not worsen. This would be similar to policies regarding restoration under alternative 1, and benefits to soils would be localized and negligible. Also similar to alternative 1, no provisions would be made in alternative 3 to restore undeveloped sites as they are in alternative 2 and the modified proposed action. No positive or adverse impacts compared to alternative 1 from this particular policy are expected in alternative 3.

**Impacts Related to Other Development.** Alternative 3 would provide for extensive development at the Ash River and Kabetogama Lake visitor center complexes, comparable to alternative 1. Removing vegetation or surface layers or compacting soils to place building pads on the steep slopes at the Ash River site could result in extensive erosion if mitigation measures were not adequate. Impacts would be similar to those described for alternative 1.

The trails described in alternative 1 plus the Kabetogama–Ash River trail, along with 5–10 new campsites and a series of warming huts, could all be built under alternative 3. This is a total of nearly 80.8 miles (131 km) of summer trails, 65.5 miles of which would be in the park. Assuming about half would require the removal of substrate, building these trails would result in the disturbance and/or removal of 20 acres (8 ha) of soils, a 66% increase compared to alternative 1 and a major localized impact. In addition, the particular challenges to building in wetland soils, as described for the modified proposed action, would apply. Parkwide, the impacts to soils from trails would be negligible.

Alternative 3 is the only alternative that includes the creation of two additional campgrounds, one at Kettle Falls and one at Sullivan Bay (each assumed to be about 4 acres). Kettle Falls is an area underlain by biotite schist, a rock that readily forms thin slabs. Although further siting work would be required to determine where the campground would be located, shallow schist-derived soils are subject to quick removal of the lichen and moss layer and exposure of tree roots confined to narrow linear depressions in the rock (NPS 1988b, III–4). Major localized impacts to soils without mitigation, or minor ones with mitigation or careful siting, would be likely.

Bedrock in the area surrounding Sullivan Bay and along Ash River for several miles south is underlain by granite (Minnesota Geological Survey 1969). While exposed granite is considered durable and ideal for campsites, the lower lying areas could have Indus-type soils. These are poorly drained, clayey soils with poor shear strength, high compressibility, and poor workability. They may pose potentially severe restrictions to camping, picnicking, and other activities because of the poor drainage and slow permeability (Lewis 1973). It is these flat, low-lying areas where cabins were once built (along the northwest shore), indicating the sites are workable to some extent. Two possible locations adjacent to a snowshoe trail are considered likely candidates for the campground. Both the localized impact to soils at these sites, and the challenges they pose to creating campgrounds, could be major.

### Cumulative Impacts

Alternative 3 would result in the greatest potential development in wetland soils. The 33-mile long summer segment of the Kabetogama–Ash River trail and the 4-acre Sullivan Bay campground could affect several acres of wetland if no care was taken in siting to avoid these types of soils.

### Conclusion

While alternative 3 would result in the same number of developed sites as alternative 1, party size restrictions and visitor education would keep the sizes of core sites smaller. This could result in 25%–30% less soil disturbance, a major localized positive impact. Closing undeveloped sites to tent camping could mean that hundreds of sites would remain unused and would be naturally restored over time. This would be a possible moderate to major localized benefit. Impacts of restoring developed sites would be similar to alternative 1. Minor localized impacts to soils could result from development at visitor centers, and minor to major localized impacts could result from constructing all the trails planned in this alternative, affecting an estimated 20 acres of soils, 66% more than alternative 1. Mitigation of impacts to soils from the development of the Kettle Falls campground would keep them from becoming more than minor. However, the impacts to and challenges of designing and building a campground in clay soils at Sullivan Bay might be more severe and could range from minor to major. Future planning for the campground would ensure no resources would be impaired. Soils in the park are not expected to be impaired as a result of implementing actions in alternative 3.

## VEGETATION

### Analysis

**Impacts Related to Fire Management Policies.** Instead of using fire as an ecosystem process as in alternative 1, the park would use it to achieve visitor use goals. The park would focus on restoring red/white pine forests. Any management to promote forest maturity would be undertaken for purposes of visitor enjoyment. Wetlands and other vegetative communities would be allowed to mature on their own, as they would under alternative 1. The outcome of adopting such a policy would be to devote staff and resources to restoring one vegetative type, and doing so in areas likely to be used by visitors. This would result in a possible 15% or higher increase in red/white pine forests over the 20-year life of the plan, a major increase over both existing conditions and compared to alternative 1. However, relying on natural forces to change other vegetative communities, including jack pine, mixed-wood, and wetland communities, would not result in greater than 1-10% increases in any, a minor benefit compared to existing conditions, and the same as alternative 1.

**Impacts Related to Overnight/Day Use Sites.** As noted above in the discussion of soil impacts, educating visitors when they obtained permits for camping at developed sites, enforcing party size restrictions and firewood-collecting rules, and closing undeveloped sites to tent camping would eliminate most of the sources of excessive impacts to resources, including vegetation. While houseboaters would continue to be allowed to moor at undeveloped sites, they would be required to obtain a permit first, thereby allowing park staff to educate them on minimal impact camping practices. The continuation of any use of undeveloped sites, even by day use visitors or houseboaters, could result in the trampling of unique or sensitive vegetation. However, many hundreds of undeveloped sites would likely remain unused (because tent camping at undeveloped sites would no longer be allowed), giving vegetation a chance to eventually recover over hundreds of years on its own. This is a possible minor to moderate benefit compared to alternative 1.

Restoring overly damaged developed sites would ensure that erosion and compaction on these sites did not worsen. However, restoration policies would be similar to those in alternative 1, and vegetation would likely only experience minor localized benefits, if any. There would be a minor benefit to vegetation from restricting fires to developed sites and only in metal fire rings, compared to alternative 1.

Vegetation in the primitive area would experience a minor localized and negligible parkwide benefit from educating campers about low-impact camping and from enforcing party size limits, compared to alternative 1.

Houseboat use would be increased to 120 sites, or 60 sites per basin, and at-large mooring would be allowed. The impacts to aquatic vegetation would be similar to those described for alternative 1 because houseboats would likely moor in areas without abundant vegetation. However, permits and the chance for educating users on the sensitivity of certain vegetative types would be required. The benefits of this contact could be locally negligible to moderate.

**Impacts Related to Other Proposed Development.** Impacts to vegetation from the development of additional visitor center facilities would be the same as alternative 1. Kettle Falls is an upland area, and some removal of upland vegetation would be required to site the proposed campground. If unique vegetation, such as rare lichen species, were avoided, the impacts should be no more than minor.

A campground at Sullivan Bay would have the potential to affect wetland and/or relatively rare vegetative resources. While the campground itself would likely be sited in upland habitat (white / red pine / quaking aspen or boreal hazelnut / serviceberry / rocky shrubland), this site is immediately adjacent to northern water lily aquatic wetland and black ash / mixed hardwood forest. It is also quite close to a small patch of dogwood/pussy willow swamp, and another of white cedar/mixed conifer forest. Boreal hazelnut / serviceberry / rocky shrubland is also a relatively rare upland vegetative community, as only 740 acres exist parkwide (USGS 1999). The park has 1,375 acres of water lily aquatic wetland, 2,400 acres of black ash / mixed hardwood forest, and 700 acres of dogwood/pussy willow swamp. White cedar/boreal conifer forest is identified as a unique plant community in the park, with 212 acres parkwide (USGS 1999). From preliminary siting maps it appears that the water lily could experience locally severe impacts from visitors attempting to access the bay. Other communities described above could be affected in a more moderate localized way by campers hiking in the vicinity, finding firewood, or creating short trails. None of these impacts is expected to be more than negligible or minor to these vegetative communities parkwide.

Trail development would affect upland vegetation and aquatic vegetation because all trails proposed in alternative 1 and the modified proposed action would be built. This would be a 66% increase in the number of acres cleared for trails compared to alternative 1, a major localized impact. However, it would be a negligible impact to parkwide vegetation. The summer segment of the Kabetogama–Ash River trail would remove about 8 acres (3 ha) of vegetation, including small amounts of wetland or rare vegetative community types if rerouting was not possible. Impacts to vegetation from this trail are described under the modified proposed action.

**Impacts Related to Recreational Use.** The use of motorboats and canoes on the park's large lakes under alternative 3 would be nearly the same as alternative 1, as would impacts to aquatic vegetation.

The boats-on-interior-lakes program could be turned over to a concessioner, which could result in increased use of nonmotorized watercraft on backcountry lakes. Impacts from canoes and small boats on aquatic vegetation include the removal and erosion of lakeshore substrate. These are not expected to be more than minor localized impacts.

**Impacts Related to Visitor Services, Education, Interpretation.** Alternative 3 proposes to develop a comprehensive interpretive plan and to expand interpretation similar to the modified proposed action and alternative 2; benefits to unique or fragile vegetation would be similar, that is, negligible or minor.

### Cumulative Impacts

In addition to cumulative impacts noted in other alternatives, alternative 3 would have the greatest potential to affect wetland vegetation.

### Conclusion

Alternative 3 would focus on using fire to restore red/white pine forests in areas of the park most likely to be visited. Major benefits to this vegetative community are possible, with minor benefits comparable to alternative 1 in other plant communities.

Minor to moderate localized benefits to vegetation from closing undeveloped sites to tent camping could occur, as these sites restored naturally over the long term. Restoration policies for developed sites and impacts would be similar to those for alternative 1, with possible localized negligible relative benefits. Requiring permits could have a minor localized benefit and negligible parkwide benefit to vegetation in the primitive area. The development of the Kabetogama–Ash River trail would result in major adverse impacts locally in Daley Bay but impacts parkwide would be minor. Locally severe impacts to wetland or other unique vegetative types from constructing a Sullivan Bay campground would be possible. However, parkwide impacts to vegetation from any development proposed by this alternative would be negligible or minor, and no impairment to this resource is expected.

Impacts to upland and aquatic vegetation from at-large mooring by houseboats, turbidity from motorized boat use and from wave action, or physical collision would be the same as in alternative 1 and the modified proposed action. Severe localized and minor to moderate parkwide impacts to vegetation would be possible without increased attention to the control of exotic plants, although the development and enhancement of educational programs could mitigate this somewhat, and no impairment to park vegetation is expected from implementing alternative 3.

## WATER QUALITY AND WATER RESOURCES

### Analysis

**Impacts Related to Overnight/Day Use.** Impacts from the use of undeveloped sites by houseboaters or day use visitors would have negligible impacts parkwide to biological oxygen demand, bacteria, and nutrient loading, similar to alternative 1.

**Impacts Related to Development.** Water quality impacts from increased turbidity due to erosion during the construction of visitor facilities, campgrounds, campsites, and trails would be indistinguishable from those described for alternative 1.

**Impacts Related to Houseboat Graywater.** No graywater holding tanks would be required under this alternative, and impacts from houseboats would be similar to those in alternative 1.

**Impacts Related to Recreational Use.** Impacts to water quality from private motorized boat use in the four major lakes would be the same as those described for alternative 1. However, additional negligible amounts of fuel and PAHs would be added to lakes where water taxi service, boat rentals, or additional tour boat service occurred.

In addition, this alternative would allow commercial fixed-wing aircraft use along the entire Kabetogama Lake developed zone. The number of fixed-wing aircraft that might land and take off from this zone is unknown, but assumed to range between 30–40 per day during the summer. It is likely that a fueling station in the zone would be required (Hablett, pers. comm. 2000), and that spills or leaks from the fueling station could occur, causing localized, temporary impacts. In addition, planes could leak small amounts of fuel or oil while their engines were running and they were in the water. However, since this would likely occur only for a few minutes per flight, and since fixed-wing aircraft engines are cleaner, four-stroke engines, the impact would be substantially less than from motorboats. Fixed-wing aircraft would add a negligible or minor amount of fuel and contribute to an ongoing exceedance of standards requiring park waters to be free of oil and grease.

### Cumulative Impacts

Additive impacts to lake water quality from snowmobiling, oil, grease, and other substances washed into the lakes from roads and parking lots, as well as septic releases from onshore sources, would continue to occur, as described for the modified proposed action.

Alternative 3 could result in increased staffing, including for resource protection. Park policies for fish and wildlife management would be strengthened to include partnerships with state and other governmental entities and private parties involved with the management of the border waters. This could result in minor to major beneficial impacts on park water resources, as described for the modified proposed action.

### Conclusion

As described for the other alternatives, dissolved oxygen or nutrient levels in the park's large lakes is affected in negligible to moderate amounts by recreational use and leaking septic systems. Discharged fuel from motorboats or snowmobiles, or runoff from parking lots or roads could result in exceeded standards or concentrations of fuel additives or petroleum products, with resulting minor or moderate impacts to water quality in the park's large lakes. The addition of a fixed-wing aircraft zone along the developed part of Kabetogama Lake would add a further, negligible amount of fuel from spills during refueling or leakage during on-the-water operations. Additional benefits to park hydrology beyond those described in alternative 1 from the International Joint Commission's supplemental order could result under alternative 3 through monitoring and partnerships with entities charged with the management of border waters. No impairment of park water quality is anticipated from implementing actions in this alternative.

## FISHERIES

### Analysis

**Impacts Related to Parkwide Management Policies.** Alternative 3 includes provisions to work more closely with the state to develop cooperative and unified approaches to fisheries management, with continued emphasis on managing the park's lakes as a sport fishery.

314

The impacts of implementing such a policy would likely be very similar to those described for alternative 1. These include fishing pressure (e.g., no limit on the number of anglers) above targets or sustainable yields, stocking as an option to increase the size of existing populations, and possibly stocking nonnative species on interior lakes to keep existing sport fisheries active. In combination with lake level management, these factors have had a minor adverse impact on sportfishing populations in the park's major lakes. The potential for moderate or major impacts exists if current mitigation fails, if water levels were regulated only for power production, or if the number of anglers and resulting fishing pressure continued to increase without regulation. (See the impacts described for alternative 1 for more information). However, agency managers have discontinued stocking for the most part, and a new supplemental order implemented in 2000 is likely to improve reproductive success. Therefore, it is unlikely that continued sportfishing would have more than minor adverse impacts on fisheries.

**Impacts Related to Recreational Use.** Motorized use levels would be the same as alternative 1, with the exception of a proposed permit system for commercial fixed-wing aircraft use along all of the Kabetogama Lake developed zone (except the visitor center); this is not expected to have more than negligible impacts on fisheries. As noted for alternative 1, no impacts from motorboat noise are expected, based on limited studies of sunfish.

### Cumulative Impacts

Cumulative impacts to fisheries would be the same as for alternative 1 (see page I–221).

### Conclusion

As described for the other alternatives, the major sportfish in Rainy Lake and the Namakan basin have experienced a number of potential stressors, including commercial and sportfishing above target levels, managed lake levels, and pollution from mercury, discharged fuel, and PAHs contained in motorboat exhaust. The combination of these factors has apparently had minor adverse effects on the park's sportfishery in its large lakes. In combination with recent changes in lake levels and reductions in stocking, fisheries in the park are likely to continue to experience no more than minor impacts from sportfishing, the same as alternative 1. Increased effort in partnering with public and private entities in charge of managing the border waters could result in minor to major benefits for fish reproductive success. No impairment of park fisheries is anticipated from implementing actions in this alternative.

## WILDLIFE

### Analysis

**Impacts Related to Park Management Policies.** Management policies would include working more closely with state wildlife managers to develop cooperative approaches to wildlife, as well as giving priority to the management of forests for visitor enjoyment, with a possible wildlife habitat benefit. Additional staff to help monitor and manage wildlife would be hired under this alternative. This combination is likely to result in negligible benefits to wildlife as compared to alternative 1.

**Impacts Related to Overnight/Day Use Sites.** Closing undeveloped sites to all but day use or houseboat visitors would reduce the frequency and intensity of human disturbance to wildlife in an otherwise relatively undisturbed area and result in a possible moderate or major local benefit compared to alternative 1.

The creation and use of developed sites would favor some wildlife species and would adversely affect others, as described in the impacts for alternative 1. Full build out would leave few long stretches along the shoreline of the large lakes without human activities; this could have a minor to moderate impact on wildlife in the lakecountry, similar to that described for alternative 1. Conflicts with black bears would be likely to increase to the same or similar levels as under alternative 1. The ability to educate all overnight visitors on park regulations and low-impact camping could have negligible to minor benefits for wildlife in the lakecountry.

Paddle-in sites would be located to avoid important vegetation, including aquatic and wetland vegetation. However, this would not prevent campers from accessing nearby sites where habitat for aquatic or semi-aquatic wildlife exists. Impacts from hikers searching for wildlife could be severe to individual animals or family groups, but would be negligible or minor on a parkwide basis.

The creation of 15–20 visitor destination sites to observe natural or cultural resources could have temporary impacts to wildlife related to development of the sites, and intermittent impacts from use of the sites, the same as the modified proposed action.

Impacts to wildlife from at-large camping in the primitive area would be the same as those described for the modified proposed action. Between 5 and 10 additional backcountry campsites along trails in the park could be established. These campsites would introduce humans and human disturbances into an otherwise relatively undisturbed area, resulting in negligible impacts to wildlife.

**Impacts Related to Proposed Development.** Alternative 3 would include roughly the same amount of development as alternative 1. The distribution would be more heavily weighted toward trails, bike lanes, and boat launches, but visitor centers would be expanded to about the same degree. Alternative 3 also includes the cooperative development of the Kabetogama–Ash River trail, warming huts along the Kabetogama–Ash River trail, and all trails shown in the *Final Environmental Impact Statement for a Wilderness Recommendation*. As noted in the impact discussion for the modified proposed action, the Kabetogama–Ash River trail could result in the removal of some small portions of relatively unique habitat for wildlife, including part of a deepwater marsh in Daley Bay. Species such as painted turtles, several species of frogs, wetland birds or waterbirds, and muskrat or beaver could be affected by the removal of wetland vegetation. Effects to individual animals or those unable to find similar habitat would be severe, but effects to wildlife would likely be negligible parkwide. Because the area that would be affected by all trail or facility development is quite small, parkwide impacts to wildlife are expected to be negligible to minor compared to alternative 1. Creating warming huts and campsites along the trails would remove a negligible amount of additional wildlife habitat, and would introduce humans and related impacts from disturbance into these otherwise relatively undisturbed areas.

**Impacts Related to Recreational Use.** Preparing a comprehensive interpretive plan, distributing information to boaters, and educating campers and houseboaters about avoiding resource impacts could reduce the impacts of the boating public on wildlife compared to alternative 1. If visitors voluntarily avoided sensitive areas for wildlife, such as shoreline vegetation, back bays, or nesting areas, and reduced speed and noise levels, major localized and minor parkwide benefits for wildlife in the lakecountry could result.

Impacts described for alternative 1 relating to motorboat noise, wildlife viewing, and passive disturbance would also apply to alternative 3. Impacts beyond those in alternative 1 to wildlife from motorized use would come from commercial fixed-wing aircraft use along the developed portion of Kabetogama Lake proposed in this alternative. Fixed-wing aircraft vary in the amount of noise they emit, but average between 80 and 110 dB (Kohn 1999; Bowles 1995). At this level, many animals can be expected to show startle reflexes, attempt to escape or hide, or even lose hearing in some cases (NPS 1994a). 120 dB is the threshold of auditory pain in humans (Bowles 1995). Desert species, such as the desert iguana and the kangaroo rat, have been shown to lose hearing after as little as an hour of exposure to loud noise, in this case motorcycles (Bondello and Brattstrom 1979).

Startle reflexes are characterized by a rapid increase in heart rate and cardiac output, but the long-term effects of these responses are unknown. Wildlife managers expect that they are synergistic when combined with other stressors, such as harsh winters or predation (NPS 1994a). Studies of responses by wildlife to airplane noise show some abandon or avoid habitat, others abandon nests or dens (Krausman et al. 1986; Schweinsburg 1974; Spindler 1983; Salter and Davis 1974).

Indirect impacts include injury during escape, reproductive losses, and energy losses. Startled animals are often panicked and are not aware of other dangers such as cliffs, scree slopes, or icy ridges. Disturbed mammals and birds running or flying from aircraft leave eggs or young exposed. Birds that quickly flush the nest may accidentally break eggs or kick them or young from the nest. Exposed eggs or young are also more subject to predation (Henry 1980). Another study (Harrington and Veitch 1992) found caribou calf mortality to be significantly higher in a group exposed to frequent low-level military overflights, which was attributed to inhibited milk release by stressed and frightened mothers. In the presence of noisy disturbance bald eagles are likely to abandon a nest before eggs are laid (Gladden 1983). However, if the eggs have already been laid, eagles appeared less inclined to abandon nests (Ellis et al. 1991).

Panic reactions and escape responses to noise, and in particular overflights or landings and takeoffs, can be energetically "expensive" to animals for two reasons. Feeding animals nearly always stop eating when disturbed, and disturbed animals expend energy to run or otherwise move away from the aircraft. Running can increase an animal's metabolism twenty-fold over normal resting rate (Maxfield 1974). Loss of nutrients or increased energy expended can ultimately compromise reproduction or migration, or even survival (NPS 1994a).

Research has also shown that the closer the aircraft, the greater the probability that an animal will respond, and the greater the degree of the response itself (NPS 1994a). Although some wildlife will adapt to airplane noise, evidence suggests that activities that cause mild responses, such as higher altitude overflights by small planes, are much more likely to be tolerated than those that cause panic. Some species also never become tolerant of aircraft, despite frequent exposure (Harding and Nagy 1978).

In the park at least three loon-breeding territories are in the vicinity of the fixed-wing aircraft pickup area on Kabetogama Lake. As described in chapter 3, loons are more sensitive than some other species to disturbance and would be likely to respond to loud or threatening noise by abandoning nest sites either temporarily or permanently. Most interior lakes also have loon-breeding territories, which would be adversely affected by the increased fixed-wing aircraft traffic to those allowing motorized use. In addition, loons nesting in the vicinity of the pathway between the pickup on Kabetogama Lake and drop-offs at interior lakes or other destinations would likely be adversely affected, as planes would necessarily fly at low altitude for much of the trip. Four of the park's five waterbird colonies (cormorants, gulls, terns) lie between the developed zone along Kabetogama Lake and the interior lakes; they would likely experience increased energy loss from startling and reduced reproductive success as described above.

Some individual animals in the vicinity of the fixed-wing aircraft area would likely attempt to move away, either temporarily or permanently. Others might habituate and stay. Reduced reproductive success or failure for sensitive species during at least the first breeding season is likely; these animals might not return to the area the following year to breed, but they could be replaced with more noise-tolerant individuals. Small migrating forest birds, such as warblers, could start migration at a relative nutrient deficit because feeding had been interrupted repeatedly by noise. Species occupying relatively rare habitats, such as certain types of wetlands or forest openings, might find it difficult or impossible to reestablish themselves in similar habitat. Others could experience crowding and consume relatively fewer nutrients. Based on the criteria presented by the National Park Service in its 1994 report to Congress on the effects of aircraft noise (see "Methodologies for Analyzing Impacts"), some park wildlife in and adjacent to the area of the proposed commercial fixed-wing aircraft use would experience moderate impacts if planes landed and took off fairly frequently (30–40 per day). Some individuals or family groups, including loons and colonial nesting waterbirds in the immediate vicinity could experience major adverse impacts. Because the impact from fixed-wing aircraft would be confined to a particular area, the integrity of the park's wildlife resource would remain intact and would not be impaired by this action. While particular family groups might experience even major adverse impacts, the populations of these species parkwide would not likely be significantly harmed.

Under alternative 3 the boats-on-interior-lakes program could become a concession, possibly resulting in an increase in the number of boaters using these lakes. Even though the results of data collection efforts on the nesting success of loons in the backcountry are inconclusive, studies in other areas suggest increased disturbance of relatively naive birds could cause increases in energy expended in escape, reductions in reproductive success, and/or abandonment of nesting territories in following breeding years (McIntyre 1988). The lakes where the boats-on-interior-lakes program is conducted accounted for three fledged chicks in 1999, or 50% of the chicks produced on interior lakes and 12.5% of all loons fledged on park waters (NPS unpublished data). The extent of impacts from increasing the use of interior lakes is unknown, but could mean moderate or major effects on the interior loon population and minor to moderate effects on park loons overall.

### Cumulative Impacts

Cumulative impacts would be similar to those described for alternative 1 and would result from habitat loss in adjacent forests and wetlands, human disturbance from vehicles or recreationists, pollutants including mercury, and water level fluctuations. Aquatic and fish-eating wildlife would experience minor to major benefits from efforts by the International Joint Commission to return lake levels and timing to conditions closer to natural conditions.

### Conclusion

Fire management policies in alternative 3 would have negligible benefits to wildlife compared to alternative 1 because fire would be used to improve visitor experience rather than wildlife habitat.

As described for alternative 2, closing undeveloped sites to all but day use or houseboat visitors would result in a possible moderate or major local benefit for wildlife compared to alternative 1. Density of developed sites and resulting impacts to wildlife as a result would be similar to those described for alternative 1. Educating visitors when they obtain a permit for overnight use could have negligible to minor benefits for wildlife, the same as the modified proposed action. Use of areas in the vicinity of paddle-in sites could have major localized effects on wildlife; education about low-impact camping could help reduce these impacts.

Development, including expanded visitor centers and the Kabetogama–Ash River trail, would result in the removal of habitat and the displacement of wildlife. As described for the modified proposed action, noise during construction and human use of the trail could temporarily disturb and displace wildlife. If animals occupy unique habitat, such as some of the wetland types the trail would necessarily traverse, impacts to individual animals or family groups could be severe. However, parkwide impacts to wildlife as a result of development would be negligible or minor.

Some park wildlife in and adjacent to the area where commercial fixed-wing aircraft would take off and land on Kabetogama Lake would experience moderate to major impacts if there were 30–40 fixed-wing aircraft trips per day. Waterbirds, including colonial nesting birds and loons in particular, could suffer major adverse effects on individuals or family groups. It is not likely, however, that the park population of any wildlife species would be significantly harmed or impaired by this or any other action in alternative 3.

### SPECIES OF SPECIAL CONCERN

#### Analysis

**Bald Eagles.** *Impacts Related to Park Management Policies* — No differences from policies described for the other alternatives are expected (see page I–227).

*Impacts Related to Overnight/Day Use* — Developing a total of 400 lakecountry day use and overnight sites would likely result in a greater degree of active and passive disturbance from visitors (see page I-227) and a shoreline with few long stretches where people were not visible. The impacts of this intensity of use to lakeshore eagles are unknown and could be negligible to major, similar to alternative 1. However, undeveloped sites would be closed to tent camping, and intrusions by humans into eagle territory would be less likely. This is a possible negligible or minor benefit compared to alternative 1.

*Impacts Related to Recreational Use* — As noted above, alternative 3 would result in the use of a section of Kabetogama Lake for commercial fixed-wing aircraft.

Using a section of Kabetogama Lake for commercial fixed-wing aircraft pick-ups and dropoffs would create noise, particularly on take-off. This is of concern because some eagles are known to flush nests when experiencing a loud noise, such as from motorboats (Anthony et al. 1995). At least two active nests lie in this area, and another eight are either in the pathway between the developed zone of Kabetogama Lake and the Chain of Lakes, and one on the Chain of Lakes, or very close to the developed zone.

Although no studies on the effects on bald eagles of fixed-wing aircraft landings and take-offs have been conducted, a recent examination of the effects of overflights from planes found that a 600-meter buffer around nests would limit disturbance (Grubb and Bowerman 1997). The U.S. Fish and Wildlife Service recommends establishing flight regulations that would restrict planes from flying lower than 300 meters over the nests even during take-off or landing (Burke, pers. comm. 2000). Of note, park staff count nesting eagles and young three to four times each season from the air in a fixed-wing aircraft at 30–50 meters, and they have reported that few eagles flush the nest during this procedure.

Without buffers, eagles in or near the area where fixed-wing aircraft would land or take off could experience major impact to reproductive success or energy reserves from repeated panic and flushing. Some could either abandon the nest during the breeding season, or they could elect not to return the following year. Eagles nesting in the vicinity or along the pathway of the fixed-wing aircraft could experience these same effects, but to a lesser degree. Using criteria described in the "Methodologies for Analyzing Impacts," 10% of the park's eagle population could experience severe adverse impacts, and another 27% moderate adverse impacts. Overall, this would be a possible moderate or major adverse impact to the bald eagle population in the park. However, if the park chose to implement buffers around nests of at least 300–600 meters, these impacts would likely be substantially reduced. The park would conduct further analysis of this option, including review by the U.S. Fish and Wildlife Service and public input, before buffers were implemented.

As described for alternative 1, impacts from snowmobiles flushing eagles from their nests, or the passive displacement of eagles from their foraging territories, would continue under alternative 3.

**Gray Wolf.** *Impacts Related to Park Management Policies* — No differences from policies described for the other alternatives are expected (see page I–228).

*Impacts Related to Overnight/Day Use* — Impacts would be the same as described for alternative 1 (see page I–228).

*Impacts Related to Other Development* — The major difference between this alternative and alternative 1 is the possibility of impact from the construction and use of the Kabetogama–Ash River trail. As described for the modified proposed action, the bulk of evidence suggests impacts to park wolves come from human disturbance and access, and through competition with coyotes or wolves from other packs using the trail as a travel corridor (see page I–260). While impacts to individual wolves could be severe, with adequate ranger patrols they would likely not be more than minor parkwide.

**Canada Lynx.** *Impacts Related to Park Management Policies* — No differences from policies described for the other alternatives are expected (see page I–229).

*Impacts Related to Overnight/Day Use* — Impacts would be the same as described for alternative 1 (see page I–229).

*Impacts Related to Other Development* — Alternative 3 would result in the completion of the Kabetogama–Ash River trail, resulting in possible impacts to lynx from use of the trail, both by skiers and hikers and by competitive wildlife species normally unable to access lynx territory because of deep snow. This alternative would also provide additional human access and possible disturbance from warming huts and campsites along the trail, and from the trails described in alternative 1 (see page I–229). The degree of impact relative to alternative 1 is unknown, as it is unknown whether a lynx population even exists in the park. Because of the addition of the Kabetogama–Ash River trail, any impact is likely to be adverse and could be negligible, moderate, or major.

**Floating Marsh Marigold.** A population of floating marsh marigold has been recently located in the park in the vicinity of one of the trails planned for development. This is a loop trail leading to and from Marion Bay. Before the trail was built, the park would survey the area and either avoid the floating marsh marigold population or fully mitigate impacts to it. It is possible the trail would either never be built, or rerouted to completely avoid this population.

**Lapland Buttercup.** This species grows in the vicinity of Daley Bay. The Kabetogama–Ash River trail would be routed around the known population of the Lapland buttercup. Any additional populations of this or any other rare plant species found during trail construction would be noted, and the trail would be rerouted to avoid them (NPS 2000c).

**Northern Bog Lemming.** If this species is present in the park, it would occupy wetland habitat and an individual or family may be disturbed or displaced by the Kabetogama–Ash River trail. Site-specific surveys would be conducted before the trail is constructed to identify and avoid habitat used by this and any other protected species if possible.

**Snapping Turtle.** Snapping turtles may be affected by the removal of small amounts wetland vegetation, particularly deepwater marsh in Daley Bay, to create a floating bridge or boardwalk for the Kabetogama–Ash River trail. Effects to individual animals or those unable to find similar habitat would be severe, but effects to snapping turtles would be negligible parkwide.

**White Pelican.** Noise from overflights or fixed-wing aircraft landing or taking off from Kabetogama Lake may result in additional flights, less food intake and possible impacts to energetics or reproduction in this species.

### Cumulative Impacts

Cumulative impacts for bald eagles would be the same as those described for alternative 1 (see page I-230) and include habitat loss, human disturbance and harassment, contamination through pesticides and other substances, water level fluctuations, and natural factors. The synergistic effect of these factors have already resulted in lower than average reproductive success, a moderate impact on the park's eagles.

Wolves have experienced impacts from habitat loss, human disturbance, direct human-caused mortality, and natural causes.

Timber management, development, and the creation of roads and trails (which favor competitors) are cumulative forces that scientists believe have adversely affected Canada lynx.

### Conclusion

As described for the other alternatives, bald eagle productivity has apparently sustained moderate adverse impacts from a variety of sources, including intentional or inadvertent harassment by snowmobilers, toxins, and forces acting on their primary prey, fish. Productivity shows signs of improving. The use of commercial fixed-wing aircraft on Kabetogama Lake could have severe impacts on 10% of the park's eagles with nests in this area, and moderate impacts on another 27% whose nests lie near it or along a flight pathway to the Chain of Lakes. Overall, this is a possible moderate or major adverse impact on the park's bald eagle population. However, if buffers around nests of at least 300–600 meters were imposed, these impacts might be substantially reduced. Increased use of fixed-wing aircraft to Kabetogama might also disrupt feeding by white pelicans.

Creating the Kabetogama–Ash River trail would have negligible or minor impacts on wolves using the area around Daley Bay, as described for the modified proposed action. These impacts would not occur from human disturbance, but from creating access for humans into wolf territory, and possible inter-specific or intra-specific competition between wolves in different packs or coyotes.

The Kabetogama–Ash River trail could also provide access by coyotes and bobcats into territory otherwise occupied by lynx. These species are competitors with lynx, and coyotes prey on them as well. If lynx exist in the park, the trail could have an unknown adverse impact on them for these reasons.

Negligible to severe localized and negligible parkwide impacts to snapping turtles or northern bog lemmings are possible from building the Kabetogama–Ash River trail.

Assuming the use of adequate buffers, no impairment to bald eagles, wolves, lynx or other protected species in the park is anticipated from the implementation of alternative 3.

## CULTURAL RESOURCES

### ARCHEOLOGICAL RESOURCES

#### Analysis

As described for alternative 1, the currently limited park program to identify and evaluate significant cultural resources would continue on a project-by-project basis, as funding permitted and would entail the development of the same number of sites as alternative 1. Visitor use of undeveloped areas would continue; however, the elimination of tent camping at undeveloped sites, along with a permit system for primitive area camping, would enable the park to better control and monitor visitor use impacts and resource protection issues. Overall visitation levels would also increase under this alternative. While improved monitoring could help identify visitor impacts, funding and staffing levels might not be commensurate with increased development and visitation to respond to treatment and stabilization needs adequately or in a timely fashion. Thus, while monitoring would be beneficial overall, the lack of funding for stabilization combined with increased visitation levels would likely result in some moderate to major localized impacts.

#### Cumulative Impacts

Similar to alternative 1, the potential for cumulative impacts to archeological resources under this alternative is not expected to be major. While increased visitation levels would result in moderate to major localized impacts at individual sites, the elimination of overnight use in undeveloped areas would help ensure that impacts over time would be negligible to minor parkwide.

#### Conclusion

Similar to alternative 1, the project-by-project inventory and evaluation of resources would result in only negligible to minor impacts parkwide. Eliminating overnight use at undeveloped areas would be beneficial to archeological sites by reducing the frequency of visitor-related impacts. While the increase in overall visitation levels in the park would usually increase the likelihood of moderate to major localized impacts, the implementation of a monitoring program would serve to reduce their frequency. No impairment to archeological resources is anticipated from implementing alternative 3.

### HISTORIC STRUCTURES

#### Analysis

Similar to alternative 1, current recommendations in the 1990 *Historic Structures Management Plan* would be followed and result in the preservation of approximately 21 properties containing multiple structures. Thirteen properties would be protected in their existing state as ruins and allowed to moulder, while 42 properties would be removed. As described in alternative 1, only a limited number of those properties slated for removal contain structures that are recommended as potentially eligible. These removals would constitute an adverse effect requiring mitigation. Overall, uses for historic properties would focus on their development as visitor destinations. The park's currently limited program of resource monitoring and maintenance would continue for these structures.

Similar to the modified proposed action, the management of historic properties would focus on working with others to highlight the connections between the park's cultural resources and those in the local, regional, and state area with specific decisions on properties based on information that would be developed in subsequent implementation plans. Public/private partnerships would be structured to allow the National Park Service to determine appropriate treatments and use, but partner organizations would actually implement treatment, maintenance, and use provisions. This would be beneficial to structures parkwide, as it would provide for more comprehensive and informed management, as well as enable much needed preservation treatments to occur regardless of current park funding and staff levels.

Similar to the modified proposed action, alternative solutions for managing historic structures would be pursued, including park operational uses (e.g., ranger outposts, field stations, housing, preservation training, offices, and storage) and a broader range of interpretive and research functions (e.g., day use sites and rentals for university-run summer programs and institutes). This would result in moderate localized impacts to individual structures stemming from rehabilitation; however, it would have a negligible impact parkwide.

The park would continue to maintain and allow public access to existing cultural resource destinations as well as develop a broad range of sites open to the public that tell visitors about the history of the park and the area. Public access would be given to select cultural resources in the park. While increased public interpretation would be beneficial overall, access to sensitive cultural resource sites would likely result in minor localized impacts.

#### Cumulative Impacts

Cumulative impacts resulting from this alternative would be similar in nature to those under alternative 1 (see page I–234), as the benign neglect or removal of historic structures would be an adverse effect requiring mitigation in accordance with applicable federal laws.

#### Conclusion

This alternative would emphasize visitor access and result in the preservation of the same number of properties as alternative 1. Removing a limited number of properties with potentially eligible structures would have major localized impacts to the selected structures; however, with required mitigation there would be only minor impacts parkwide. Attention would be given to alternative solutions to managing structures, including public/private partnerships and adaptive reuse. Access to select historic resources would be allowed. While adaptive reuse and visitor access to resources would have negligible impacts parkwide, they would also result in moderate to major localized impacts to individual resources. Enhanced visitor use and interpretation would also be beneficial, as it would increase awareness and appreciation of the park's resources. No impairment to historic structures is anticipated from implementing alternative 3.

### CULTURAL LANDSCAPES

#### Analysis

The management of cultural landscapes under this alternative would be similar to that under the modified proposed action. Two notable differences, however, would be (1) the management of landscapes, with the preparation of individual reports and development plans, would be expanded to include other historic properties, and (2) the Ellsworth Rock Garden landscape would be fully restored. More comprehensive management of landscapes that include other historic properties would be beneficial for both their long-term preservation and for public education and appreciation. The development and implementation of individual management plans would provide much needed guidance for the park in protecting and preserving landscapes, as well as managing visitor use and future development in these areas.

### Cumulative Impacts

Similar to the previous alternatives, the waterway transportation system of the voyageurs, along with its portages, forested uplands, rocky shorelines, and other geographic features, is part of a larger cultural landscape of the fur trade. Park legislation and this alternative would provide for vegetation management to reestablish an environment that more closely resembles that present during the time of the fur trade. While this would create a cultural landscape of the fur trade, it would have impacts on landscapes associated with historic activities occurring after the fur trade period. Some specific landscape features, such as earthen embankments that indicate the presence of historic logging camps, would be protected through localized vegetation control, but the larger landscapes they are associated with would be reclaimed by vegetation.

### Conclusion

In the current absence of sufficient documentation and planning guidance, any future implementation plans developed for individual landscapes would provide much needed guidance for the park in managing visitor use and development of those landscapes. Even though the emphasis of this alternative is on increased visitor use development, the implementation of individual plans and a more comprehensive management approach would be beneficial in significantly reducing impacts both to landscapes individually and parkwide. No impairment to cultural landscapes is anticipated from implementing alternative 3.

## COLLECTIONS

### Analysis

The collections policy under this alternative would broaden acquisition guidelines to include objects significant not only to the park but to the region as well. Access to these collections by park staff, researchers, and the public would be established on a scheduled basis, as well as increased through on-site and off-site exhibits, publications, and the Internet. This alternative would require increased curation funding and staff not only to properly catalogue, curate, and conserve additional artifacts according to federal standards, but also to develop appropriate interpretive media to enhance access to the collection.

### Cumulative Impacts

No cumulative impacts to existing collections are anticipated under this alternative. Increased public access and education would be beneficial in creating support and awareness for the importance of collections.

### Conclusion

Broadened acquisition guidelines and increased access to and education about the park's collections would benefit both the public and the collections. However, this approach would require additional funding and staff for accessioning, conservation, and educational media development. While increased accessions would burden curation and conservation resources, impacts to collections overall would be negligible. No impairment to collections is anticipated from implementing alternative 3.

### ETHNOGRAPHIC RESOURCES

Impacts would be the same as described for alternative 1 (see page I–236). No impairment to ethnographic resources is anticipated from implementing alternative 3.

## IMPACTS ON THE VISITOR EXPERIENCE — FIRE MANAGEMENT

### ANALYSIS

As described for alternative 1, fire management (suppression, prescribed burning, and fire use) could temporarily inconvenience visitors because of smoke and site or area closures. Also, during the planning process for prescribed burns, impacts on visitor use areas could be eliminated or reduced by selecting wind directions that would ensure that smoke would not be targeted to these areas. Through planning, public notification, and education, fire management activities at Voyageurs could inconvenience visitors but would have little effect on the impairing visitor experiences.

### CONCLUSION

Fire management activities at Voyageurs could inconvenience visitors but would have little effect on impairing visitor experiences.

## IMPACTS ON THE VISITOR EXPERIENCE — VISITOR USE AND FACILITIES

### ANALYSIS

#### Parkwide Management

**Entry Fees / Facility Use Fees.** Improved collection of visitor data by means of a fee/reservation system for overnight use would generate additional park funding, but limited visitor use information (the same as alternative 1). If determined appropriate following a feasibility study, an entry and user fee system would allow the park to collect comprehensive, quantifiable visitor use data (the same as alternative 2).

**Overnight Permit System.** Establishing a fee/reservation system for overnight use would allow the park to collect additional funds for park operations. However, this system would provide limited visitor use information, the same as alternative 1.

**Monitoring Programs.** Establishing a comprehensive monitoring program would result in better data collection concerning seasonal visitor use patterns, visitor needs and experience, and resource impacts, the same as the modified proposed action.

#### Water Management Areas

**Integrated Uses.** Conflicts between users on the four major lakes would be diminished as a result of distributing brochures about boating etiquette, conducting programs, and providing park orientation, the same as the modified proposed action.

**Overnight Houseboat Use.** Under alternative 3 a permit system would allow 70 houseboats per basin (a park total of 140) and would help ensure a future balance of in-water recreational uses. This quota would go into effect following plan approval, and limited concession contracts with the four existing houseboat companies would be established. The quota would allot 10 permits for private use and 60 permits for commercial use (rental) per basin, the greatest opportunities of any alternative.

Use limits would generate some adverse impacts to the visitor experience for houseboaters, particularly if use levels increased in the future. Houseboat users, especially those who own private watercraft, might find it difficult at times to obtain permits, especially during peak periods. Houseboat users might need to plan well in advance to ensure that they could obtain a commercial houseboat or private permit.

If quotas were reached, some visitors might perceive that houseboats were dominating in-water recreational use, and therefore generate adverse impacts to the experiences of other park guests. However, the quotas would potentially retain a higher degree of balanced uses than under alternative 1.

**Fixed-Wing Aircraft.** Commercial and private fixed-wing aircraft use would continue to provide access to the remote areas of the park's interior, the same as alternative 1. Expanding commercial fixed-wing aircraft use to include Kabetogama Lake would afford the greatest opportunities for visitors to experience remote and unique areas of the park.

**Boats on Interior Lakes.** Establishing a concessioner-managed boat-on-interior-lakes program would continue to encourage visitation to remote areas of the Kabetogama Peninsula. Costs and minor inconveniences associated with the reservation of watercraft might discourage a few visitors from participating in the program. The level of adverse impacts on users could be affected by the rate charged by the concessioner. Since visitors would be liable for damages to boating equipment, greater care would likely result, thus improving the quality of the experience for subsequent users.

**Snowmobiles.** Snowmobile users would continue to traverse the park by way of an extensive groomed trail system, as described for alternative 1.

**Special Use Zone.** The impacts would be the same as alternative 1 (see page I–238).

### Land Management Areas

#### *Developed Area*

**Visitor Centers.** Year-round operations at all visitor centers and the development of a multi-agency center at Crane Lake would expand opportunities for visitor contact and interpretive programs to the greatest degree, the same as alternative 2. Under this alternative, additional space, an educational center, and outdoor interpretive facilities at Ash River, along with the potential use of historic structures at Kabetogama Lake, would better meet the needs of visitors along the southern shore of the lake. Improved facilities and operations would generate the greatest benefits of all alternatives for park users over the long term.

**Parking.** Through partnering with others to provide additional parking and shuttle services, the visitor experience would be improved, the same as the modified proposed action.

**Boat Launches.** Visitor experiences would be improved by providing separate launches for motorized and nonmotorized watercraft, the same as the modified proposed action.

**Bicycle/Pedestrian Facilities.** Designated bike lanes on park entry roads would improve the experience for visitors by providing safe and pleasant park access, the same as the modified proposed action.

326

### *Lakecountry Area*

**Day/Overnight Use Sites.** Similar to alternative 1, up to 186 additional day and overnight use sites could be developed (about 400 total), thus accommodating significantly greater use levels than currently exist. Full development would include 230 tent campsites, 120 houseboat sites, 28 traditional day use sites, and 15–20 visitor day use destination sites, plus 4 small campgrounds and 4 group campsites. The range of day use, tent, and houseboat sites would provide for the largest diversity of recreational opportunities in the park. Because tent campers would be restricted to developed sites only, fewer sites would be available to them than under alternative 1 or the modified proposed action. However, 124 tent campsites would be built, more than under the modified proposed action or alternative 2. Under alternative 3 the greatest number of houseboat sites would be constructed.

The addition of mainland campsites and a small campground development would provide recreational opportunities for visitors without access to watercraft. Approximately 40% of the lakecountry area would be developed as high density (subarea 1), similar to alternative 1. Although this scale of site development would provide maximum opportunities for a wide range of users, there could be an undetermined level of adverse impacts to the visitor experience parkwide due to a higher degree of activity, noise, social encounters, but slightly less than under alternative 1.

If determined appropriate following a feasibility study, a permit or reservation system would assure visitors of being able to secure a developed overnight use site, resulting in moderate benefits for visitors. Visitors would also no longer be able to enjoy the same degree of spontaneity and freedom that currently exists in selecting an overnight use site

A range of developed overnight camping facilities would support 9 to 72 people per site, benefiting a range of user groups. Adverse impacts to the visitor experience of neighboring users could occur as a result, the same as alternative 1. The addition of a small campground at Kettle Falls would provide an appropriate area for park visitors to stay and begin hikes into the interior of the Kabetogama Peninsula. This campground would provide the only camping facility near a restaurant in the park. The addition of mainland campsites and a small campground would provide for the greatest opportunities of any alternative for visitors not having access to watercraft.

**Day Use.** Restricted use would create inconveniences for some users, but allowing the use of undeveloped sites (without fires) and prioritizing development of day use sites would diminish adverse impacts to the visitor experience, the same as alternative 2. Discontinued day use at developed tent and houseboat sites would reduce site-use conflicts, resulting in positive impacts to the visitor experience (the same as alternative 2).

**Use of Undeveloped Sites.** Allowing houseboaters to moor at undeveloped sites would continue to provide convenient options for these visitors, but could potentially reduce the quality of the experience for nearby users, the same as alternative 2. Restricting tent users to developed sites in the lakecountry would allow for more efficient management of overnight use. Inconveniences would be created for overnight visitors who were accustomed to using undeveloped sites, the same as alternative 2.

**Fires and Firewood.** Localized adverse impacts to the visitor experience would occur by limiting fires to metal fire rings at developed sites. However, over the long term, adverse impacts to the visitor experience would become less, as more day use sites were constructed, the same as the modified proposed action.

**Visitor Destination Sites.** Cultural and natural history interpretation would be expanded by developing 15–20 visitor destination sites and benefiting visitors, the same as the modified proposed action.

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### *Backcountry Trail Areas*

**Summer Trails.** An expanded nonmotorized summer trail system that includes an additional 80.8 miles of hiking trails (65.5 in the park, and potentially 15.3 miles outside the park) would afford the greatest opportunities for visitors to experience backcountry areas of any alternative, resulting in major benefits for visitors. Trails would be designed to contribute to a comprehensive network on the Kabetogama Peninsula, with more modest opportunities by way of shorter loop trails dispersed throughout the park (the same as alternative 1). The Kabetogama–Ash River trail would generate major benefits to visitors, the same as the modified proposed action and alternative 3. If determined appropriate following a feasibility study, an extension of the Kabetogama–Ash River trail to Crane Lake would provide even greater regional benefits, the same as the modified proposed action.

**Winter Trails.** The additional ~26 miles of nonmotorized trails as part of the Kabetogama–Ash River trail system would provide benefits to winter season visitors, the same as the modified proposed action.

**Camping.** Developing an additional 5–10 campsites along the Kabetogama–Ash River trail would afford greater opportunities and benefit a few visitors seeking more remote camping experiences in backcountry areas, as well as those without access to watercraft.

**Winter Hut-to-Hut System.** Under alternative 2 a winter hut-to-hut system would be developed along the proposed Kabetogama–Ash River trail and other areas of the park, expanding winter recreational and overnight camping opportunities for cross-country skiers and snowshoers, as well as snowmobilers. Additionally, this system might encourage greater levels of winter season use.

### *Primitive Areas*

**Camping.** Allowing overnight camping at undeveloped sites with a four-person party size limit and not allowing fires would inconvenience only a few visitors, yet help ensure a quiet primitive area experience, the same as the modified proposed action.

## CUMULATIVE IMPACTS

As described for the modified proposed action, a monitoring program would provide a more accurate method for collecting visitor use data, thus helping in visitor use management throughout the region. The integration of motorized and nonmotorized use on the four major lakes and designated interior lakes would continue, causing some visitors to seek other destinations. Developing the proposed Kabetogama–Ash River trail and a potential extension to Crane Lake would allow for connections to other destinations. Under alternative 2 providing a regional winter hut-to-hut system for visitors traveling by motorized and nonmotorized means would require greater cooperation efforts for visitor management, but would enhance recreational opportunities.

## CONCLUSION

Improved collection of visitor data by means of fee/reservation system for overnight use would generate additional park funding. However, this system would provide limited visitor use information, the same as alternative 1. If determined appropriate following a feasibility study, an entry/user fee system would result in the park being able to collect comprehensive visitor use data, the same as the modified proposed action. This would allow management decisions to more accurately and immediately respond to visitor needs, improving the visitor experience over the long term, the same as the modified proposed action.

Through a permit system, a quota of 70 houseboats per basin (a park total of 140) would help ensure future balanced use and would allow for some expansion from current use. Houseboat users, especially those who own private watercraft, might find it difficult at times to obtain permits, especially during peak periods. If the quota were reached, houseboats could potentially dominate recreational activities, resulting in minor to adverse impacts to the experiences of other park visitors, but potentially less than in alternative 1. Current commercial groups would find long-term security since they would be able to obtain contracts, the same as the modified proposed action.

Fixed-wing aircraft use would continue on the seven interior lakes and provide access to remote park areas. Commercial fixed-wing aircraft use would be expanded near the Kabetogama community, allowing greater opportunities to transport park visitors into remote areas of the park.

Impacts of the special use zone would be the same as alternative 1.

Year-round operations at all visitor centers (the same as alternative 2) and expanded indoor and outdoor facilities at Ash River and Kabetogama Lake, along with a multi-agency visitor center at Crane Lake (the same as the modified proposed action), would result in major benefits to the quality of visitor experience.

Through partnering with others for additional parking and shuttle service, visitor frustration would be minimized, the same as the modified proposed action.

Developing an additional 186 day and overnight use sites (about 400 total) with 40% of the shoreline at high density (volume 1) would accommodate significant increases in overnight visitation. This alternative would provide the most houseboat sites and slightly fewer tent sites than alternative 1. Eliminating lakecountry tent camping at undeveloped sites and day use at overnight campsites would help improve visitor management and maintain qualities of natural quiet and remoteness, the same as alternative 2. However, tent campers might find it necessary to reserve a site ahead of time during peak seasons. Establishing a permit or reservation system would benefit visitors by providing a means of locating a developed overnight use site. Visitors would no longer have the same degree of freedom and spontaneity that currently exists in selecting a site.

Developing 15–20 visitor destinations would afford opportunities to interpret park resources, with greater benefits than all the other alternatives.

Localized adverse impacts to the visitor experience by limiting fires to metal fire rings at developed sites would be the same as the modified proposed action. Allowing the gathering of dead and down firewood would generate localized adverse impacts, the same as alternative 1.

An expanded nonmotorized trail system that includes an additional 80.8 miles of summer hiking trails and ~26 miles of winter trails (in and out of the park) would result in the most opportunities for a backcountry trail experience, benefiting visitors to the greatest degree of all alternatives. Trails would exist on the Kabetogama Peninsula, the same as alternative 1, and on the mainland, the same as modified proposed action.

No impairment to the visitor experience is anticipated from implementing actions in alternative 3.

## VISITOR EXPERIENCE — NOISE AND REMOTENESS

### ANALYSIS

#### Motorized Uses

Under alternative 3 permitting commercial fixed-wing aircraft use on designated areas of Kabetogama Lake (depending on the landing area and frequency) would generate additional noise, undetermined disturbances to visitor experiences, and a reduced feeling of remoteness along shoreline areas of the Kabetogama community. The level of temporary and localized adverse impacts would be based on plane schedules and landing locations, which are currently unknown. There would be no designated areas on the four major lakes where users of nonmotorized watercraft could be assured of finding quiet areas, the same as alternative 1 and the modified proposed action. Also, commercial and private fixed-wing aircraft access to remote areas of the park's interior would generate temporary, localized impacts on natural quiet in primitive areas.

#### Nonmotorized Uses

The Kabetogama–Ash River trail would provide for quieter and safer nonmotorized uses, as described for the modified proposed action. A negligible adverse impact to natural quiet would result from winter hut-to-hut use in backcountry areas.

#### Visitor Use of Day/Overnight Sites

Building up to about 400 day and overnight use sites and permitting houseboat mooring at undeveloped sites would diminish natural quiet and feelings of remoteness for some, similar to alternative 1. Restricting overnight tent camping to developed lakecountry sites would help ensure natural quiet in lakecountry areas, the same as alternative 2. Developing two additional small campgrounds and four group campsites with a maximum party size of 72 people would decrease natural quiet and feelings of remoteness in adjacent areas, similar to alternative 1, resulting in localized adverse impacts to neighboring visitors.

### CUMULATIVE IMPACTS

No cumulative impacts were identified.

### CONCLUSION

Expanded commercial fixed-wing aircraft use on Kabetogama Lake would generate an undetermined amount of noise and result in unknown temporary and localized adverse impacts to the natural quiet environment of neighboring lakeshore areas near the Kabetogama community. Adverse impacts to natural quiet and remoteness from motorized uses on seven interior lakes would be the same as alternative 1 and the modified proposed action. Providing up to 400 day and overnight use sites, allowing large party sizes (72 persons maximum), and permitting use of undeveloped sites by houseboaters and primitive area users would result in minor localized impacts on natural quiet and remoteness in lakecountry areas. However, eliminating overnight tent camping at undeveloped sites in the lakecountry would help maintain a greater degree of natural quiet than under alternative 1 and possibly the modified proposed action.

## VISITOR EXPERIENCE — SAFETY

### ANALYSIS

As described for the modified proposed action, expanded outreach programs and safety programs would help reduce safety conflicts, and rerouting the Moose Bay snowmobile portage/trail and the Mukooda Lake snowmobile trail would improve safety for snowmobile users.

### CUMULATIVE IMPACTS

No cumulative impacts were identified.

### CONCLUSION

As described for the modified proposed action, visitors would benefit from expanded educational opportunities about boating etiquette and safety. Improved snowmobile trails/portages would offer visitors safe experiences.

### CONCESSIONS

#### Analysis

The continuation of current concession operations would positively impact the contract holders and park visitors, as described for alternative 1. Establishing additional concession operations would provide economic opportunities in the communities surrounding the park and would broaden visitor services, as described for the modified proposed action.

#### Cumulative Impacts

Concessioners would continue to add to the economic viability of their community. The benefits of additional concession contracts would expand into the communities surrounding the park.

#### Conclusion

Continuing the concession contracts would benefit the contract holder, park visitors, and the National Park Service, the same as the alternative 1. Possibly expanding concession contracts would provide more convenient services for some visitors, the same as the modified proposed action.

## INTERPRETATION, VISITOR SERVICES, AND EDUCATION

### ANALYSIS

#### Visitor Center Operations

Visitor contact through year-round operations at visitor centers would be expanded for the benefit of visitors, the same as alternative 2. Under this alternative additional space, an environmental education center, and outdoor interpretive facilities at Ash River, along with the potential use of historic structures at Kabetogama Lake, would greatly enhance opportunities for visitor education and programs along the southern shore of the lake. Additional indoor facilities would allow more programs to be given during the winter season and periods of inclement weather.

As described for the modified proposed action, developing a multi-agency visitor facility at Crane Lake would provide year-round services to this area of the park, and would benefit visitor interpretation and education.

### Interpretive Programs, Publications, Projects, and Education

Developing a comprehensive interpretive plan focusing on the park's mission, purpose, and significance would enhance opportunities for visitors to navigate and understand historic trails of the voyageurs. Programs tailored to better address visitor needs would allow visitors to more easily immerse themselves in experiencing the park, the same as the modified proposed action.

The backlog of visitor orientation, information, and safety messages would be addressed with increased staffing and funding, providing greater benefits to visitors, the same as the modified proposed action.

Educational and outreach programs would be expanded, on-site opportunities for education would be augmented, and overall participation in interpretive programs would likely increase, the same as the modified proposed action.

### Educational Institute

Developing an educational institute would generate benefits as described for the modified proposed action (see page I–273).

### Cumulative Impacts

As described for alternative 1, regional visitor information facilities would continue to provide diverse services for area visitors. Cumulative impacts would be the same as described for the modified proposed action, except visitor contact opportunities would be the greatest through year-round operations at all visitor centers. These facilities and additional staffing would promote greater regional and national interest in park and regional resources.

### Conclusion

Benefits to visitors would result from year-round visitor center operations, an educational institute, and a multi-agency visitor center at Crane Lake, the same as alternative 2. Visitor opportunities for education would be enhanced to the greatest degree of any alternative by providing expanded indoor and outdoor visitor center space at Kabetogama Lake and Ash River, plus an environmental education center at Ash River.

## PARK OPERATIONS, FACILITIES, AND PARTNERSHIPS

### ANALYSIS

### Staffing

Additional staffing and funding would improve the efficiency of most areas of park operations — visitor services, maintenance, and resource management — thus enhancing the visitor experience and the protection of natural and cultural resources (the same as the modified proposed action). Approximately 27 full-time equivalent and 20 seasonal positions would be added over time to accomplish management actions under this alternative. The funding of some positions would be supported through fee collections.

As described for the modified proposed action, additional staff would be needed to conduct feasibility studies, implement recommended programs, enforce new rules, operate the Crane Lake visitor center, and expand interpretation and resource management programs. Increases in annual operating funds would be needed to add staff. Some staff would experience a moderate increase in workload as actions were implemented.

### Cumulative Impacts

Additional staff would help alleviate the need for reliance on volunteers and human resources from outside the park, the same as modified proposed action.

### Conclusion

A significant operational workload as a result of fee/permit/reservation system, regular monitoring, and expanded visitor programs would be handled by increased staffing, as described for the modified proposed action.

## NPS OPERATIONS AND FACILITIES

### Analysis

As described for the modified proposed action, a development plan for Namakan District operations would improve the efficiency of operations and the use of existing space, which would be a positive impact. The proposed multi-agency visitor center at Crane Lake would expand park facilities and require support services. Visitor services and resource protection would increase as a result of this action. Plans for Kettle Falls would provide workspace for employees, which would improve services to the area, allow more visitor contact, facilitate programming, and provide greater protection for park resources. Using historic cabins for park housing would help alleviate the strain on current park housing, but would most likely require water transportation because of location. These accommodations would be remote without modern conveniences, the same as the modified proposed action.

Under alternative 3 expanding indoor and outdoor space for operations and maintenance at Ash River, and determining the most appropriate uses for the Kabetogama Ranger Station Historic District, would enhance park operations in the Namakan District.

### Cumulative Impacts

No new employee housing would be provided in the park. Providing additional employee housing through an outside partnership would generate positive impacts for seasonal park staff seeking short-term housing, the same as the modified proposed action.

### Conclusion

Consolidating existing maintenance and ranger facilities, along with developing additional facilities at Crane Lake and Kettle Falls, would result in more efficient park operations, the same as the modified proposed action. Work and storage facility improvements at the Ash River operation area in the Namakan District would result in the greatest positive impacts to park operations of any alternative.

## PARTNERSHIPS

### Analysis

The National Park Service would continue its current partnerships for safety, natural and cultural resource research, protection, and maintenance, which support park operations and resource protection, the same as alternative 1. Increased cooperation for fisheries and wildlife management would positively impact the park's natural resources. The pursuit of additional cultural resource partnerships would increase the means and number of people available to conduct treatment and maintenance actions, as well as develop cultural resources for visitor use, as described for the modified proposed action.

As described for the modified proposed action, active NPS participation in and support of other agencies' and organizations' planning, zoning, and land use activities that protect park viewsheds and what visitors value about the park would positively impact the visitor experience. A partnership for a recreational vehicle campground outside the park with lake access would greatly increase the opportunities for visitors who do not have a boat to access the park.

### Cumulative Impacts

An increased effort to expand partnerships would take more time and energy, but the effort would benefit the ability of park and regional managers to protect resources, provide quality visitor services, and build trust between constituents, the same as the modified proposed action.

### Conclusion

Expanded partnerships and cooperation with various public and private organizations would afford greater opportunities to utilize the expertise of resource managers, recreation specialists, and service providers. Increased communications between the park and neighboring land managers would afford greater potential for developing common strategies for resource protection and recreational opportunities (same as modified proposed action).

## SOCIAL AND ECONOMIC ENVIRONMENT

### ANALYSIS

### Parkwide Management

Focusing transitional forest activities near visitor use areas could increase the time visitors stay in the area, resulting in a positive impact. No disruption to visitor activities or the surrounding community are expected if implementation strategies for the first management plan took these factors into account.

Developing 15–20 visitor destination day use sites could increase the potential for extended stays in the area and attract new user groups, positively impacting the surrounding community.

Partnering with others to develop joint regional interpretation of cultural resources would add another destination image to Voyageurs National Park and attract new user groups. The cooperative nature of the efforts would improve relations between the community and the park.

Construction expenditures by the National Park Service would provide a temporary positive impact to the local economy to the extent that goods and services were purchased locally.

3394

The density of low-income and minority populations is greater in the communities near the eastern part of the park than the western part. Because this alternative would affect the gateway communities of Crane Lake and Ash River areas more than the other communities, there would be a greater positive effect on minority and economically disadvantaged populations in these communities.

### Visitor Use and Facilities

#### *Water Management Areas*

Quotas for commercial and private houseboats over the long term might have an adverse effect on community cohesion but not to the same extent as alternative 2.

#### *Land Management Areas*

**Developed Area.** Except for reducing day use at developed campsites, this alternative would offer the broadest range of facilities and access opportunities. Increased visitation and extended stays would have a net beneficial impact on the local economies.

Creating a comprehensive program of exhibits, displays, publications, and other educational tools would help foster tourism and aid businesses in the gateway communities, the same as the modified proposed action.

Cooperative efforts proposed between the park and the community would increase cohesion and relations between the community and the park.

**Backcountry Trail Area.** Expanding the backcountry trail system would have no adverse impact on existing users. Rather, it would attract more and different hikers and skiers, resulting in increased local spending. The winter hut system would also appeal to an additional category of skiers and snowmobilers.

Working with partners to develop cooperative trails would have a positive impact both on relations between the community and the park and on destination marketing.

**Primitive Area.** Limiting party sizes to six and prohibiting open fires during at-large camping in primitive areas might slightly reduce the already small number of visitors participating in this activity. There would be no measurable economic impact from this change.

### Interpretation, Visitor Services, and Education

#### *Parkwide Management*

Impacts would be the same as those described for alternative 1.

#### *Water Management Areas*

Creating a water-based historic trail and self-guided tour would both attract new visitors and extend the stay of existing visitors. This alternative would have a positive impact on local economies.

## Park Operations, Facilities, and Partnerships

### *Parkwide Management*

Impacts would be the same as those described for alternative 1. There would be a minor, short-term reduction in the number of visitors if a fee system was instituted; there would be no adverse effect on commercial operations overall; and there might be a reduction in the number of private houseboats allowed, with a resulting minor impact on suppliers of goods or services for users of private houseboats.

### *Land Management Areas*

Construction activities proposed under this alternative would have a positive impact on the local economy.

New visitor and interpretive services would encourage longer stays, resulting in a positive impact on the local economy.

Partnerships with local communities for housing would have a positive impact on local economic activity, housing stock, and community cohesion.

## CUMULATIVE IMPACTS

Cumulative impacts would be similar to those described for the other alternatives. Partnering with others to develop cooperative interpretive programs for cultural resources would add another destination image to Voyageurs and potentially attract new user groups. The cooperative nature of programs would improve relations between the community and the park. Working with community partners to develop off-site parking would have a positive impact on relations between the community and the park. Working with partners to develop cooperative facilities in the backcountry would have a positive impact on both relations between the community and the park and on destination marketing. Creating an educational institute in partnership with local communities and others would attract new visitors, enhancing the destination image of the park. It would also increase community cohesion and improve community facilities. The cooperative nature of fishery management programs would have a positive effect on community cohesion.

## CONCLUSION

Creating a comprehensive program of exhibits, displays, publications, and educational tools would foster tourism, aid businesses, and have a slight positive effect on the area's economy and community relations, the same as the modified proposed action.

Overall, this alternative would have a slightly positive effect on the regional economy and relations between the community and the park because more visitors could be accommodated, and there would be opportunities to stay longer. Quotas for commercial and private houseboats might have an adverse impact on community cohesion, but not to quite the extent as alternative 2. It cannot be determined if limiting the number of private houseboats would have an adverse economic effect. An overnight use fee and possible entry/user fees are not expected to have a measurable effect on the regional economy after the first two years, similar to alternative 2.

## UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts under alternative 3 would be the same as those described for alternative 1, with the following exceptions. Small amounts of wetland vegetation could be removed as a result of creating paddle-in sites, the *Kabetogama–Ash River* trail, and the *Sullivan Bay* campground. Additional impacts on wildlife, including colonial nesting birds or bald eagles, from the noise of commercial fixed-wing aircraft use on *Kabetogama Lake* would occur. Unavoidable impacts from providing human access to wolf territory via the *Kabetogama–Ash River* trail could be mitigated with adequate ranger patrolling of the trail.

Unavoidable adverse impacts to cultural resources would be the same as those described for alternative 1. Specifically, compliance with federal laws requiring the identification, evaluation, and mitigation of effects of cultural resources would still be done on a project-by-project basis; however, the emphasis on increased visitor use would tend to intensify the risk for unavoidable adverse impacts.

The implementation of an overnight permit system would not allow for the same degree of freedom in selecting an overnight site that exists without a reservation system. Since there would be about 27 fewer tent sites than under alternative 1, and because overnight use of undeveloped sites would not be permitted, tent users might need to obtain permits in advance, especially during peak use times. Due to the density of overnight sites, situations would arise where visitor disturbance would be greater, causing a reduction in seclusion, natural quiet, and the overall quality of the experience for some visitors.

## LOSS IN LONG-TERM AVAILABILITY OR PRODUCTIVITY TO ACHIEVE SHORT-TERM GAIN

Losses in long-term productivity would the same as those described for alternative 1, except the use of commercial fixed-wing aircraft on an area of *Kabetogama Lake* would likely have long-term consequences for wildlife species in the area, especially those relatively intolerant of noise or increased human activity.

## IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

Commitments of resources would be the same as those described for alternative 1. Specifically, management options under this alternative would involve the destruction of nonrenewable cultural resources; however, appropriate mitigation measures should minimize these impacts.

## CONSISTENCY WITH NEPA SECTIONS 101 AND 102(1)

As noted for alternative 1, section 101 of the *National Environmental Policy Act* indicates that agencies should do the following:

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

(2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

(3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable or unintended consequences;

(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;

(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The National Park Service now requires that each alternative be compared to these criteria to see the degree to which they are met. As noted for alternative 1, all of the information needed to respond to these criteria is available by reading the preceding three sections, beginning with "Unavoidable Adverse Impacts." For instance, the section on long-term productivity and short-term gain explains which resources would be lost to achieve the recreational use of the park if this alternative was implemented and encompasses criteria 1 and 5 above. Criteria 2 and 4 (and to some extent criterion 3) speak to the quality of the environment. Some impacts are unavoidable, however, and these are summarized under the heading "Unavoidable Adverse Impacts." Criteria 3 and 6 deal with sustainability and the loss of resources, which is essentially described for irreversible or irretrievable commitments of resources.

NEPA section 102 (1) asks that agencies administer their own plans, regulations, and laws so that they are consistent with the policies outlined above to the fullest extent possible.

Alternative 3 is responsive to criterion 5 above, which does not constrain the use of resources by a mandate to preserve and protect them. This alternative would provide for the greatest number of developed sites for camping, the highest number of trailheads, and the most miles of trails. It would also allow floatplane access on Kabetogama Lake.

However, this use would also result in impacts as described in the summary sections above. Impacts to soils, vegetation, wildlife, protected species, and cultural resources would be more severe than any other alternative, suggesting the balancing between use and preservation called for in criteria 3 and 4, and the policy to protect resources inherent in criteria 1, 2, and 6, would not be met as well as in other alternatives.

# CHAPTER 5: CONSULTATION AND COORDINATION

## SCOPING PROCESS AND PUBLIC PARTICIPATION

The general management planning process for Voyageurs National Park began in April 1998, with NPS meetings to discuss the planning process timeline and begin the scoping process. In June 1998 the planning team, which consisted of Denver Service Center staff and park staff, met to refine the park's mission, purpose, and significance statements. These statements, which are part of the framework for the plan, were first published in the park's 1997 *Strategic Plan*, which had been publicly reviewed.

In August 1998 the public was formally notified of and introduced to the planning process through an announcement in the *Federal Register* and *Newsletter 1: Scoping Phase*. The newsletter was mailed to 528 individuals, organizations, or agencies on the park's general management plan mailing list. Extra copies of the newsletter were placed at park visitor centers. Interested citizens who were not on the mailing list requested copies by mail, phone, or electronic mail. The newsletter asked the public to review the park's mission, purpose, and significance statements, as well as answer a series of questions about the future of the park and issues facing the park.

The National Park Service conducted public scoping meetings in August 1998 in Minneapolis/St. Paul, Duluth, Orr, and International Falls. A total of 142 people attended the meetings, and approximately 170 written responses were received, in addition to those comments recorded at the public scoping meetings. In December 1998 the National Park Service distributed a statewide press release about the summary of comments heard during the scoping phase.

Using public input, along with an inventory and analysis of information gathered at the park, region, and other areas, the planning team developed three draft management alternatives for Voyageurs National Park. These alternatives were presented in an *Alternatives Response Booklet* released in May 1999. This second newsletter was sent to 930 individuals, organizations, and agencies.

Public open houses to review the alternatives were held in International Falls, Orr, Duluth, and Minneapolis/St. Paul in June 1999. The open houses included information stations that covered the planning process, existing conditions, and each of the three alternatives. A total of 117 people attended the open houses. The National Park Service received over 450 written responses during the public comment period on the draft management alternatives, which ended in August 1999.

In August 1999 the planning team began analyzing environmental impacts and developing the draft proposed action, based on public comments. To keep the public informed of the planning process, the National Park Service distributed a statewide press release entitled "Public Responds to Request for Comments on Voyageurs National Park Plan" in September 1999. This press release summarized public comments on the draft management alternatives review phase.

Just prior to the distribution of the *Draft General Management Plan / Environmental Impact Statement*, the NPS mailing list included 1,133 addresses for individuals and organizations. Each of these addresses received a newsletter in May 2000 that included a postage-paid postcard for requesting a copy of the draft document. If the National Park Service received the postcard, the sender received a copy of the plan.

The availability of the *Draft General Management Plan / Environmental Impact Statement and Visitor Use and Facilities Plan* was announced in the *Federal Register* on June 16, 2000. Comments were requested by August 23, 2000. The document was also available at park headquarters, visitor centers, and regional libraries.

On July 10, 2000, the National Park Service distributed a statewide press release entitled "Public Invited to Open Houses on the Future of Voyageurs National Park." This press release informed the public about the open houses scheduled for July 24–27, 2000. It also invited people to send in written comments if they could not attend a meeting.

From July 24 to 27, 2000, the National Park Service conducted public open houses in International Falls (39 people attended), Orr (22 people), Duluth (6 people), and Minneapolis/St. Paul (7 people). Each open house included information stations about the following topics: planning process, existing conditions, draft proposed action, alternative 1, alternative 2, and alternative 3.

On August 10, 2000, the National Park Service distributed a statewide press release entitled "Voyageurs' Comment Period Extended for 30 Days." This press release informed the public that the comment period deadline was extended until September 22, 2000. It also informed the public that copies of the draft document were still available for review.

On September 22, 2000, the National Park Service distributed a statewide press release entitled "Voyageurs' Comment Period Extended for 30 Days." This press release informed the public that the comment period deadline was extended until October 23, 2000. It also informed the public that copies of the draft document were still available for review.

Throughout the review period, a full-time staff person at Voyageurs National Park was available to provide information to anyone who wished to provide a written response.

Throughout the above timeline, the National Park Service met with the *Visitor Use and Facilities Plan* Ad Hoc Consultation Group. During 1999 the consultation group met in February, May, July, August, September, October, November, and December to review and comment on specific topics of the three draft management alternatives. In December 1999 the group also discussed promotion and marketing as well as partnerships. In January 2000 the group met to review the first draft of the *Visitor Use and Facilities Plan*, and in August 2000 they met to discuss and comment on the *Draft General Management Plan / Environmental Impact Statement and Visitor Use and Facilities Plan*. Detailed information about the consultation group meetings can be found in the *Visitor Use and Facilities Plan* part of this document.

## RECIPIENTS OF THE DRAFT GENERAL MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT

The following individuals were sent copies of the *Draft General Management Plan / Environmental Impact Statement and Visitor Use and Facilities Plan*. An asterisk indicates that a comment was received from that agency, business, or organization. A listing of all who commented on the draft document is included in volume 2.

Minnesota Congressional Delegation
Senator Rod Grams
Senator Paul Wellstone
Representative James Oberstar

U.S. Federal Agencies
Advisory Council on Historic Preservation
Department of Agriculture
- U.S. Forest Service
  - Chippewa National Forest
  - Superior National Forest

Department of Defense
- Department of the Army, U.S. Army Corps of Engineers

Department of the Interior
- Assistant Secretary, Fish and Wildlife and Parks
- Bureau of Indian Affairs
- National Park Service
  - Apostle Islands National Lakeshore
  - Biscayne National Park
  - Grand Portage National Monument
  - Intermountain Regional Office

Isle Royale National Park
Midwest Archeological Center
Midwest Regional Office
Mississippi National River and Recreation Area
Ozark National Scenic Riverways
Pictured Rocks National Lakeshore
Pipestone National Monument
Saint Croix National Scenic Riverway
Sleeping Bear Dunes National Lakeshore
Theodore Roosevelt National Park
Virgin Islands National Park
U.S. Fish and Wildlife Service
U.S. Geological Survey, Biological Resources Division
Environmental Protection Agency*
International Joint Commission
U.S. Border Patrol
U.S. Coast Guard Auxiliary
U.S. Customs Office
U.S. Immigration and Naturalization Service

**Canadian Agencies and Tribes**
Quetico Provincial Park
Ontario Ministry of Natural Resources
Fort Frances, Ontario
  Mayor Glenn Witherspoon
Rainy River First Nations

**U.S. Tribal Organizations**
1854 Authority
Bois Forte Reservation Tribal Council
Grand Portage Reservation Tribal Council
Leech Lake Tribal Council
Mille Lacs Reservation Business Committee
Red Lake Tribal Council

**Minnesota State Officials**
Governor Jesse Ventura
The Honorable Elmer L. Andersen
State Representative Irv Anderson
State Representative Thomas Bakk
State Representative Marilyn Brick
State Representative Mark Holsten
State Senator Doug Johnson
State Senator Bob Lessard
State Representative Betty McCollum
State Senator Pat Pariseau

**Minnesota State Agencies**
Arrowhead Regional Development Commission
Iron Range Resources Rehabilitation Board
Minnesota Department of Natural Resources*
Minnesota Department of Trade and Economic Development
Minnesota Historical Society*
  State Historic Preservation Officer
Minnesota Office of Tourism*
Minnesota Pollution Control Agency
Science Museum of Minnesota

**Minnesota Local Governments**
City of Ely, Mayor Edward [illegible]
City of Littlefork, Mayor Mike Zelenak
City of Ranier, Mayor Dave Thompson
City of International Falls
  City Council*
  Mayor Jack Murray*
City of Orr
  City Council
  Mayor David Glowacki
Koochiching County Commissioners*
Saint Louis County
  Commissioners*
  County Planning and Zoning

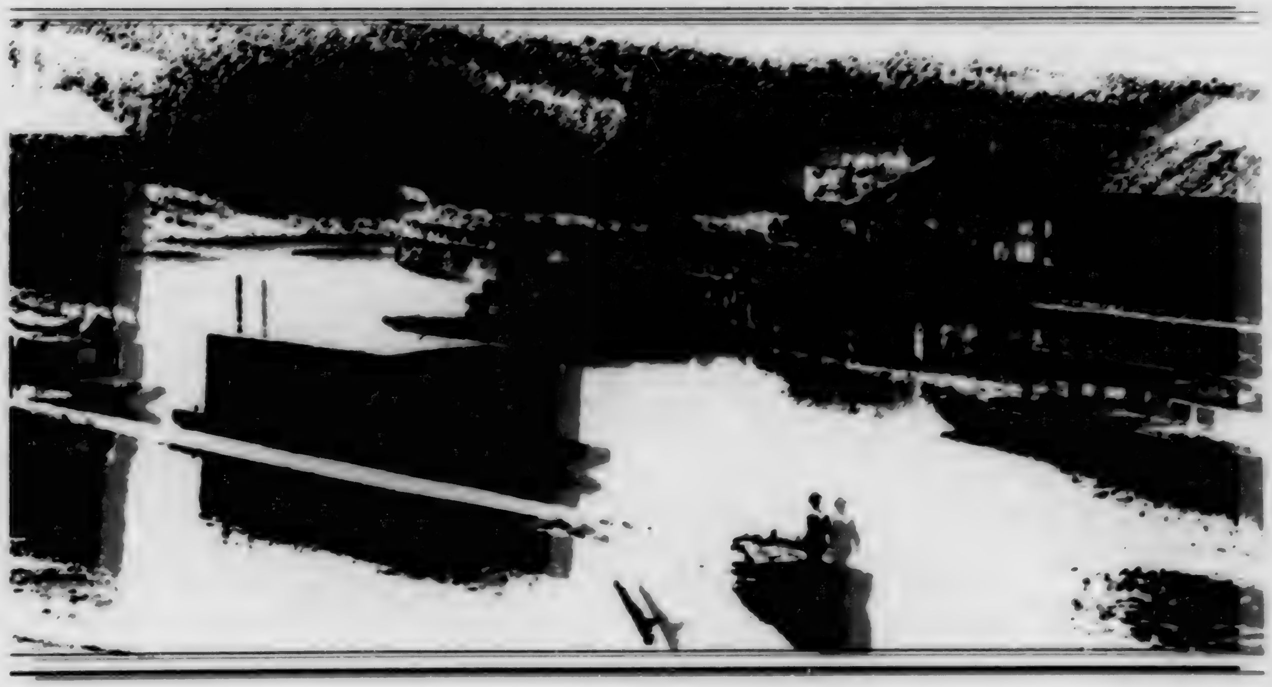
**Businesses and Organizations**
Almanac/KTCA-TV
American Canoe Association
American Council of Snowmobile Associations
American Recreation Coalition
American Sportfishing Association
Ash River Commercial Club*
Associated Press
Abitibi Consolidated, Fort Frances Division
Ayres Associates
Bait-n-Bite*
Bluewater Network*
Bombardier Motor Corporation of America
Border Lakes Association
Boundary Waters Treaty Coalition
Burchell's Moosehorn Resort*
Cedar Cove Campsites & Resort*
The Center for the Study of the Environment
Citizens Task Force on Alternatives for Voyageurs National Park
Cold Weather Resource Center
Conservation Legacy Alliance
Cook News Herald
Crane Lake Visitor and Tourism Bureau
Cross-Country Ski Area Association
Dougherty's Rainy Lake Houseboats*
Driftwood Lodge Resort*
Duluth News-Tribune
Friends of Boundary Waters Canoe Area Wilderness*

394

Friends of Voyageurs National Park
General Equipment Company*
Independent School District 361
Indiana North Woods Club*
Inland Sea Kayakers*
Institute for Policy Research
International Falls Area Chamber of Commerce*
International Falls Area Convention & Visitors Bureau*
International Falls Daily Journal
International Falls Travel Information Center
International Snowmobile Association
International Wolf Center
International Voyageurs Snowmobile Club*
Izaak Walton League*
Jetsporters Association of Minnesota
Kabetogama Lake Association*
KBJR-TV
KDLH-TV
Kec's Cove*
KEDP
KGHS/KSDM
KKBJ AM/FM
Lake States Interpretive Association
Lutheran Coalition for Public Policy in Minnesota
Minneapolis Star Tribune
Minnesota Ecosystems Recovery Project
Minnesota News Network
Minnesota Public Radio
Minnesota Snowmobiling Magazine
Minnesota United Snowmobilers Association
Mississippi Headwaters Audubon Society*
National Audubon Society
National Parks Conservation Association*
National Park Foundation
National Park Hospitality Association
Natural Resources Research Institute
The Nature Conservancy
Northeastern Minnesotans for Wilderness
Northern Illinois Conference
Northern Resources Center
Our Area Chamber of Commerce*
Park Point Resort*
Public Affairs Consultant
Rainy Lake Sportfishing Club
Red Wing Publishing Company
Rendezvous Yacht Club (Fort Frances)*
Rocky Point Resort*
Saint Paul Pioneer Press
Seaplane Pilots Association*
Sierra Club North Star Chapter*
Sigurd Olson Environmental Institute
Stewardship Alliance for Voyageurs National Park
The Timberjay
Voyagaire Houseboats*
Voyageur Country Houseboat Association*
Voyageur Outward Bound School
Voyageurs Adventures*
Voyageurs and Our Area Information Center
Voyageurs Country Houseboat Operators Association*
Voyageurs National Park Visitors Association*
Voyageurs Pilots Association
Voyageurs Region National Park Association*
WDIO/WIRT TV
WDSE Public TV
Wilderness Inquiry
Wilderness Society*
Wildlife Population & Research Group
Wildlife Science Center
Yellowstone Center for Resources

**Educational Institutions**
Bemidji State University
Michigan Technological University
Northeast Minnesota Historical Center
Pennsylvania State University
Rainy River Community College
Saint Mary-of-the-Woods College
University of Arizona
University of Massachusetts
University of Minnesota
West Virginia University

# Maps



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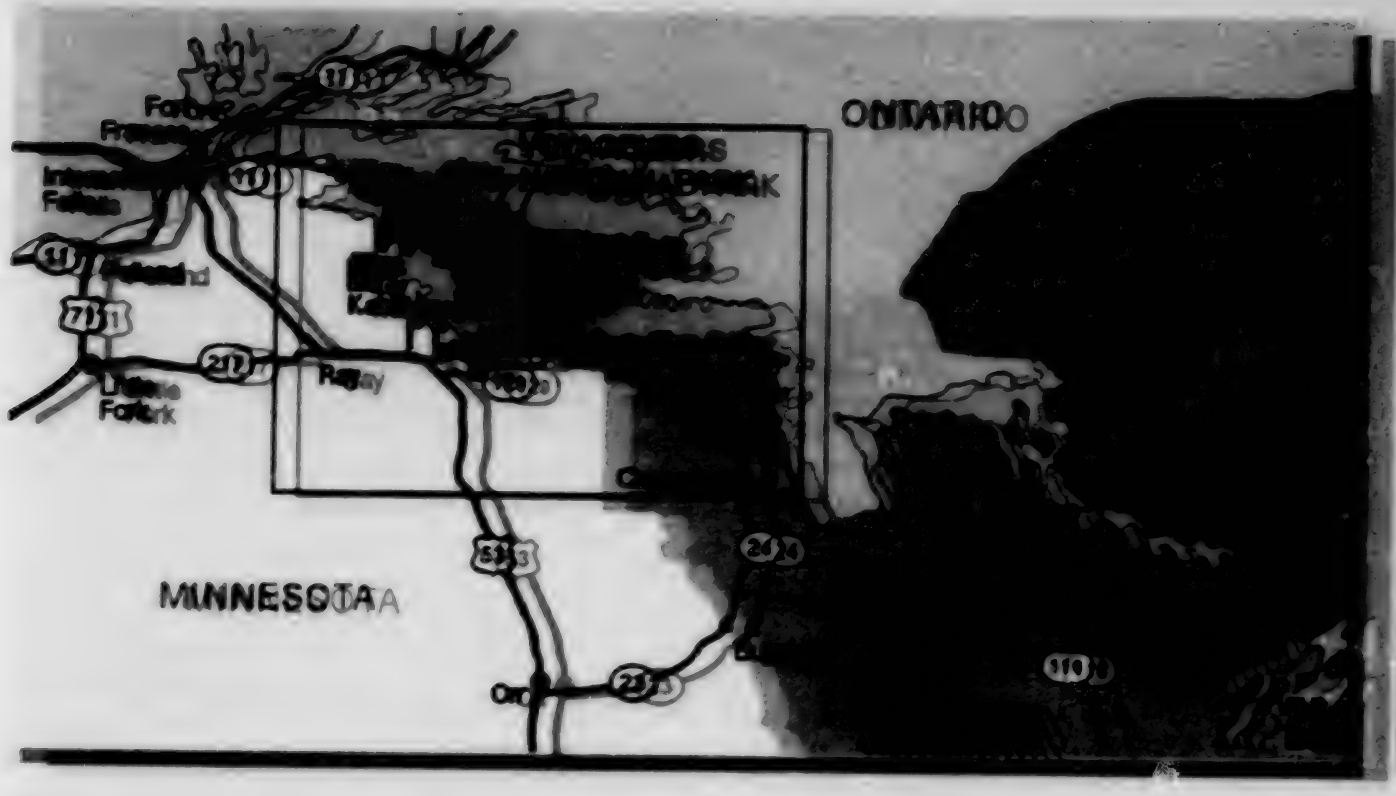

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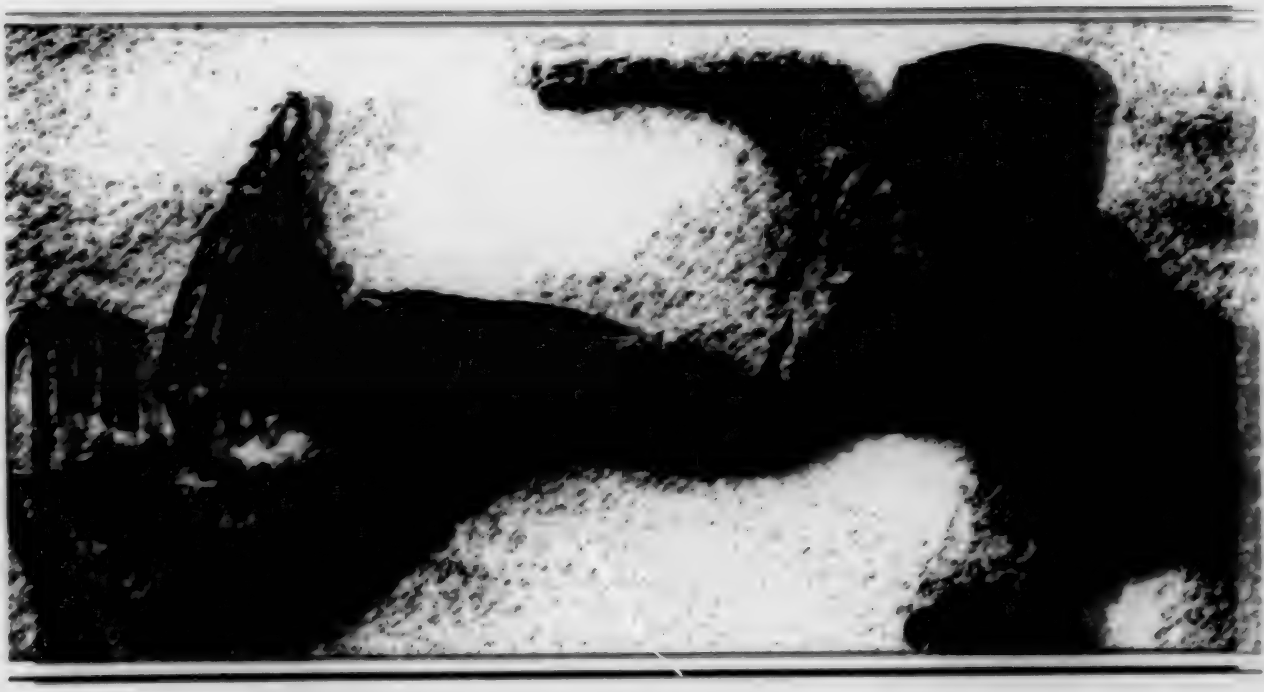
3468

# Appendices

Glossary
References Cited
Preparers
Index



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3590

# APPENDIX A: LEGISLATION

An Act to authorize the establishment of the Voyageurs National Park in the State of Minnesota, and for other purposes. (84 Stat. 1970)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the purpose of this Act is to preserve, for the inspiration and enjoyment of present and future generations, the outstanding scenery, geological conditions, and waterway system which constituted a part of the historic route of the Voyageurs who contributed significantly to the opening of the Northwestern United States.

## ESTABLISHMENT

Sec. 101. In furtherance of the purpose of this Act, the Secretary of the Interior (hereinafter referred to as the "Secretary") is authorized to establish the Voyageurs National park (hereinafter referred to as the "park") in the State of Minnesota, by publication of notice to that effect in the Federal Register at such time as the Secretary deems sufficient interests in lands or waters have been acquired for administration in accordance with the purposes of this Act: Provided, That the Secretary shall not establish the park until the lands owned by the State of Minnesota and any of its political subdivisions within the boundaries shall have been donated to the Secretary for the purposes of the park: Provided further, That the Secretary shall not acquire other lands by purchase for the park prior to such donation unless he finds that acquisition is necessary to prevent irreparable changes in their uses or character of such a nature as to make them unsuitable for park purposes and notifies the Committees on Interior and Insular Affairs of both the Senate and the House of Representatives of such findings at least thirty days prior to such acquisition.

Sec. 102. The park shall include the lands and waters within the boundaries as generally depicted on the drawing entitled "A Proposed Voyageurs National Park, Minnesota," numbered LNPMW-VOYA-1002, dated February 1969, which shall be on file and available for public inspection in the offices of the National Park Service, Department of the Interior. Within one year after acquisition of the lands owned by the State of Minnesota and its political subdivisions within the boundaries of the park the Secretary shall affix to such drawing an exact legal description of said boundaries. The Secretary may revise the boundaries of the park from time to time by publishing in the Federal Register a revised drawing or other boundary description, but such revisions shall not increase the total acreage within the park by more than one thousand acres.

## LAND ACQUISITION

Sec. 201. (a) The Secretary may acquire lands or interests therein within the boundaries of the park by donation, purchase with donated or appropriated funds, or exchange. When any tract of land is only partly within such boundaries, the Secretary may acquire all or any portion of the land outside of such boundaries in order to minimize the payment of severance costs. Land so acquired outside of the park boundaries may be exchanged by the Secretary for non-Federal lands within the park boundaries. Any portion of land acquired outside the park boundaries and not utilized for exchange shall be reported to the General Services Administration for disposal under the Federal Property and Administrative Services Act of 1949 (63 Stat. 377), as amended. Any Federal property located within the boundaries of the park may be transferred without consideration to the administrative jurisdiction of the Secretary for the purposes of the park. Lands within the boundaries of the park owned by the State of Minnesota, or any political subdivision thereof, may be acquired only by donation.

(b) In exercising his authority to acquire property under this section, the Secretary shall give immediate and careful consideration to any offer made by any individual owning property within the park area to sell such property to the Secretary. In considering such offer, the Secretary shall take into consideration any hardship to the owner which might result from any undue delay in acquiring his property.

Sec. 202. (a) Any owner or owners (hereinafter referred to as "owner") of improved property on the date of its acquisition by the Secretary may, if the Secretary determines that such improved property is not, at the time of its acquisition, required for the proper administration of the park, as a condition of such acquisition, retain for themselves and their successors or assigns a right of use and occupancy of the improved property for noncommercial residential purposes for a definite term not to exceed twenty-five years, or, in lieu thereof, for a term ending at the death of the owner, or the death of his spouse, whichever is later. The owner shall elect the term to be reserved. The Secretary shall pay to the owner the fair market value of the property on the date of such acquisition less the fair market value on such date of the right retained by the owner.

(b) If the State of Minnesota donates to the United States any lands within the boundaries of the park subject to an outstanding lease on which the lessee has constructed a noncommercial residential

residential dwelling prior to January 1, 1969, the Secretary may grant to such lessee a right of use and occupancy for such period of time as the Secretary, in his discretion, shall determine: *Provided*, That no such right of use and occupancy shall be granted, extended, or continue after ten years from the date of the establishment of the park.

(c) Any right of use and occupancy retained or granted pursuant to this section shall be subject to termination by the Secretary upon his determination that such use and occupancy is being exercised in a manner not consistent with the purposes of this Act, or upon his determination that the property is required for the proper administration of the park. The Secretary shall tender to the holder of the right an amount equal to the fair market value of that portion which remains unexpired on the date of termination.

(d) The term "improved property", as used in this section, shall mean a detached, noncommercial residential dwelling, the construction of which was begun before January 1, 1969, together with so much of the land on which the dwelling is situated, the said land being in the same ownership as the dwelling, as the Secretary shall designate to be reasonably necessary for the enjoyment of the dwelling for the sole purpose of noncommercial residential use, together with any structures accessory to the dwelling which are situated on the land so designated.

Sec. 203. Notwithstanding any other provision of the law, the Secretary is authorized to negotiate and enter into concession contracts with the owners of commercial, recreational, resort, or similar properties located within the park boundaries for the provision of such services at their present locations as he may deem necessary for the accommodation of visitors.

Sec. 204. The Secretary is authorized to pay a differential in value, as hereinafter set forth, to any owner of commercial timberlands within the park with whom the State of Minnesota has negotiated, for the purpose of conveyance to the United States, an exchange of lands for State lands outside the park. Payment hereunder may be made when an exchange is based upon valuations for timber purposes only, and shall be the difference between the value of such State lands for timber purposes, as appraised by the State, the Secretary, and any owner, and the higher value, if any, of such lands for recreational purposes not attributable to establishment or authorization of the park: *Provided*, That any payment shall be made only at such time as fee title to lands so acquired within the boundaries is conveyed to the United States.

ADMINISTRATION

Sec. 301. (a) Except as hereinafter provided, the Secretary shall administer the lands acquired for the park, and after establishment shall administer the park, in accordance with the provisions of the Act of August 25, 1916 (39 Stat. 535) as amended and supplemented (16 U.S.C. 1-4).

(b) Within four years from the date of establishment, the Secretary of the Interior shall review the area within the Voyageurs National Park and shall report to the President, in accordance with subsections 3(c) and 3(d) of the Wilderness Act (78 Stat. 890; 16 U.S.C. 1132 (c) and (d)), his recommendation as to the suitability or nonsuitability of any area within the park for preservation as wilderness, and any designation of any such area as a wilderness may be accomplished in accordance with said subsections of the Wilderness Act.

(c) All mining and mineral activities and commercial water power development within the boundaries of the park shall be prohibited, and further, any conveyance from the State of Minnesota shall contain a covenant that the State of Minnesota, its licensees, permittees, lessees, assigns, or successors in interest shall not engage in or permit any mining activity nor water power development.

Sec. 302. (a) The Secretary shall permit recreational fishing on lands and waters under his jurisdiction within the boundaries of the park in accordance with applicable laws of the United States and of the State of Minnesota, except that the Secretary may designate zones where and establish periods when no fishing shall be permitted for reasons of public safety, administration, fish and wildlife management, or public use and enjoyment. Except in emergencies, any regulations of the Secretary pursuant to this section shall be put into effect only after consultation with the appropriate agency of the State of Minnesota.

(b) The seining of fish in Kabetogama Lake by the State of Minnesota to secure eggs for propagation purposes shall be continued in accordance with plans mutually acceptable to the State and the Secretary.

Sec. 303. The Secretary may, when planning for development of the park, include appropriate provisions for (1) winter sports, including the use of snowmobiles, (2) use by seaplanes, and (3) recreational use by all types of watercraft, including houseboats, motorboats, canoes, sailboats, fishing boats and other watercraft.

Sec. 304. Nothing in this Act shall be construed to affect the provisions of any treaty now or hereafter in force between the United States and Great Britain relating to Canada or between the United States and Canada, or of any order or agreement made or entered into pursuant to any such treaty, which by its terms would be applicable to the lands and waters which may be acquired by the Secretary hereunder, including, without limitation on the generality of the foregoing, the Convention Between the United States and Canada for Emergency Regulation of Level of Rainy Lake and of Other Boundary Waters in the Rainy Lake Watershed, signed September 15, 1938, and any other related agreements thereto.

Sec. 305. The Secretary is authorized to make provision for such roads within the park as are, or will be, necessary to assure access from present and future State roads to public facilities within the park.

APPROPRIATIONS

Sec. 401. There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act, not to exceed, however, $26,014,000 for the acquisition of property, and not to exceed $19,179,000 (June 1969 prices) for development, plus or minus such amounts, if any, as may be justified by reason of ordinary fluctuations in construction costs as indicated by engineering cost indices applicable to the types of construction involved herein.

Approved January 8, 1971.

Legislative History
House Report No. 91-1552 (Committee on Interior and Insular Affairs).
Senate Report No. 91-1513 (Committee on Interior and Insular Affairs).
Congressional Record, Vol. 116 (1970):
  Oct. 5, considered and passed House.
  Dec. 22, considered and passed Senate, amended.
  Dec. 29, House concurred in Senate amendments.

**Public Law 97-405**
**97th Congress**

## AN ACT

To revise the boundary of Voyageurs National Park in the State of Minnesota and for other purposes.

Be it enacted by the Senate and the House of Representatives of the United States of America in Congress assembled, That the Act entitled "An Act to authorize the establishment of the Voyageurs National Park in the State of Minnesota, and for other purposes", approved January 8, 1971 (84 Stat. 1971) is amended–

(1) in section 102 by striking out "The" after "Sec. 102." and inserting in lieu thereof "(a) Except as provided in subsection (b) of this section, the";

(2) by inserting after section 102(a), as redesignated by paragraph (1), the following new subsection:

"(b)(1) In addition to such revisions as the Secretary may make in the boundaries of the park from time to time pursuant to other provisions of law, the Secretary may, according to the provisions of subsection (a)–

"(A) delete approximately 782 acres in the Neil Point area of the park;

"(B) add approximately 180 acres in the Black Bay Narrows areas of the park;

"(C) add approximately 18.45 acres owned by the State of Minnesota at the Kabetogama Forestry Station;

"(D) add approximately 120 acres owned by the State of Minnesota, being a strip of land through that portion of section 1, township 68 north, range 20 west, fourth principal meridian, which is parallel to and 400 feet on both sides of the unimproved road extending northward from the Ash River Trail as such road crosses each section; and

"(E) subject to the provisions of paragraph (2), delete approximately 1,000 acres at Black Bay and convey such lands to the State of Minnesota.

All of the aforementioned boundary changes if accomplished shall be accomplished such that the boundary of the park shall conform to that generally depicted on the drawing entitled "Boundary, Voyageurs National Park, United States Department of the Interior, National Park Service", numbered 172-80,008-MWR, and dated November 1981, which shall be on file and available for public inspection in the offices of the National Park Service, Department of the Interior.

"(2) The Secretary may not delete or convey the lands referred to in paragraph (1)(E) unless, prior to or simultaneously with such deletion or conveyance and in consideration of such conveyance, the State of Minnesota–

"(A) tenders a conveyance of the lands described in paragraph (1) (C) and (D) to the United States by such instrument and in such manner as are satisfactory to the Secretary, including but not limited to lease or easement: Provided, That if the interest conveyed is a lease or easement, the State of Minnesota shall substitute therefore a transfer of all right, title and interest in the land by June 30, 1987: *Provided further*, That if the State does not transfer all right, title and interest in such lands by June 30, 1987, the land described in paragraph 1(E) shall revert to the United States for administration by the Secretary as part of the park; and

"(B) enters into a recordable agreement satisfactory to the Secretary which provides that –

"(i) the State has established a wildlife management area in the area authorized to be deleted and conveyed to the State by paragraph (1)(E));

"(ii) the State has prepared a plan acceptable to the Secretary to manage all the waters of and State lands riparian to Black Bay (including all of the State-owned lands and waters of Rainy Lake) to preserve the natural resources of the area so as to complement to the fullest extent possible the purposes for which the park was established;

"(iii) the State shall not transfer any right, title or interest in, or control over, any land described in paragraph (1)(E) to any person other than the Secretary; and

"(iv) the State shall permit access by the Secretary at reasonable times to the land described in paragraph (1)(E).

"(3) If at any time the State fails to comply with the material requirements of the agreement referred to in paragraph (2)(B), all right, title and interest in the land described in paragraph (1)(E) shall revert to the United States for administration by the Secretary as part of the park. Such reversion shall take effect upon the delivery by the Secretary of notice to the State respecting such failure to comply without further notice or requirement for physical entry by the Secretary unless an action for judicial review is brought in the United States Court of Appeals for the appropriate circuit within ninety days following such notice. In any such action the court may issue such orders as are appropriate to carry out the requirements of this subsection";

(3) by adding after the last sentence of section 301(b) the following new sentence: "The President shall, no later than June 1, 1983, advise the United States Senate and House of Representatives of his recommendations with respect to the suitability or nonsuitability as wilderness of any area within the park."; and

(4) in section 401—

(A) by inserting "(a)" after "Sec. 401";

(B) by striking out "$26,014,000" and inserting in lieu thereof "$38,314,000"; and

(C) by adding at the end the following new subsections:

"(b) The Secretary shall, in cooperation with other Federal, State and local governmental entities and private entities experienced in the fields of outdoor recreation and visitor services, develop and implement a comprehensive plan for visitor use and overnight visitor facilities for the park. The plan shall set forth methods of achieving an appropriate level and type of visitation in order that the resources of the park and its environs may be interpreted for, and used and enjoyed by, the public in a manner consistent with the purposes for which the park was established. Such plan may include appropriate informational and educational messages and materials. In the development and implementation of such plan the Secretary may expend funds donated or appropriated for the purposes of this subsection. Effective October 1, 1983, there is authorized to be appropriated for the purposes of this subsection not to exceed $250,000, to remain available until expended.

"(c) The Secretary is directed to study existing road access to the park and to report to Congress on the impact of park-related use of those roads and to report specific recommendations on improvements necessary to insure adequate road access to the park. The Secretary is directed to report, within one year of the date of enactment of the Act which appropriates funds authorized under this subsection, to the Committee on Interior and Insular Affairs of the House of Representatives and to the Committee on Energy and Natural Resources of the Senate. Effective October 1, 1983, there is authorized to be appropriated for the purposes of this subsection not to exceed $75,000.

"(d) For purposes of section 7(a)(3) of the Land and Water Conservation Fund Act of 1965 (16 U.S.C. 460l-9(a)(3)), the statutory ceilings on appropriations established by this section shall be deemed to be statutory ceilings contained in a provision of law enacted prior to the convening of the Ninety-fifth Congress.

Approved January 3, 1983.

LEGISLATIVE HISTORY—S. 625 (H.R. 846):
SENATE REPORT No. 97-423 (Comm. on Energy and Natural Resources).
CONGRESSIONAL RECORD, Vol. 128 (1982):
June 10, considered and passed Senate.
Sept. 29, H.R. 846 considered and passed House; proceedings vacated and
S. 625, amended, passed in lieu.
Oct. 1, Senate concurred in House amendments with amendments.
Dec. 14, House concurred in certain Senate amendments and agreed to an amendment with an amendment.
Dec. 16, Senate agreed to House amendment.

# APPENDIX B: VOYAGEURS NATIONAL PARK DRAFT INTERPRETIVE THEMES AND COMPELLING STORIES

## Geology

At Voyageurs National Park exist rocks of colorful granite, basalt, and schist created by the forces of natural earth processes, through millions of years, glaciation after glaciation. Today, a surface so smooth we seek rest on, are inspired by, and admire Voyageurs' view. For in its rocks, woods, water, and sky, we experience a young, glacially carved landscape atop the roots of the continent. These rocks are a geologic treasure, a foundation that has survived for nature to grow. Here, one feels the ancient through the thin veneer of the new.

## Voyageurs Waterways

Voyageurs National Park enables people to travel in the wake of the birch bark canoe of the Indian and voyageur. For two centuries the main economic enterprise in North America, the fur trade, funneled through this primary waterway route. A global enterprise, it stimulated exploration, cultural exchange and exploitation, forever changing both Native and European cultures. From the severe hardship of the voyageur's life we learn that joy can find root in the simple toil of companionship, pride in a job well done and closeness to unrelenting nature.

## A Place on the Edge

Voyageurs National Park is a place on the edge, a watery landscape on the edge of Civilization, where people sought adventure, independence, freedom, and livelihood. A place called the "Pays d'en haut," the far north, by the fur traders, where gold brought those seeking wealth, lumberjacks rustled logs, and bootleggers traded. Sitting on the edge of two nations, the wild remoteness of the park still inspires those seeking adventure and solitude.

## Interaction of People and Landscape

With its unmatched mosaic of water and land, the landscape of Voyageurs National Park has dramatically shaped the lives of people. Successive cultures have left their marks on the land but have not changed its character, while the land has shaped the character of the cultures.

## Conservation Movement

Like a stone cast in the water, the conflict over the building of the Kettle Falls Dam has sent ripples through time. It was a battle of industrial development versus conservation of the waterway with its Native American subsistence lifeway. The battle fought in the border lakes region would have political and environmental repercussions across the nation.

# APPENDIX C: CULTURAL RESOURCE THEMES FOR VOYAGEURS

Primary themes identified by the National Park Service and sub-themes identified by Voyageurs National Park serve as criteria for selecting cultural resource destination sites for interpretation.

**Peopling Places**

- Prehistoric Native American Occupation
- Historic Native American Occupation
- Early Settlement

**Creating Social Institutions and Movements**

**Recreational Activities**

**Expressing Cultural Values**

- Architecture
- Landscape Architecture
- Traditional Culture

**Shaping the Political Landscape**

**Developing the American Economy**

- Fur Trade
- Logging
- Commercial Fishing
- Mining
- Hunting, Trapping and Blueberry Harvesting
- Prohibition

**Expanding Science and Technology**

**Transforming the Environment**

- Conservation Period

**Changing Role of the U.S. in the World Community**

# APPENDIX D: COST ESTIMATES

## ALTERNATIVE 1

Note: The following costs are 2001 general estimates for comparison with the other alternatives. They are not intended to be used as a budget document.

| | | | |
|---|---|---|---|
| **Repair and Rehabilitation** | | | |
| Retain Historic Properties (21) | $1,203,817 | $173,359 | $1,377,176 |
| Subtotal | $1,203,817 | $173,359 | $1,377,176 |
| **New Construction** | | | |
| *Structures/Sites/Features* | | | |
| Ash River Operations Area Expansion | n/a | n/a | n/a |
| Crane Lake Multi-Agency Visitor Center | n/a | n/a | n/a |
| Environmental Education Facility (includes lab boat) | n/a | n/a | n/a |
| Kettle Falls Workstation | $147,500 | $21,250 | $168,750 |
| Natural/Cultural Resource Visitor Destinations (6) | $639,560 | $92,140 | $731,700 |
| Nonmotorized Boat Launches | n/a | n/a | n/a |
| Outdoor Amphitheater at Ash River Visitor Center | n/a | n/a | n/a |
| Outdoor Exhibits at Ash River Visitor Center | n/a | n/a | n/a |
| Subtotal | $787,060 | $113,390 | $900,450 |
| *Developed Overnight and Day Use Sites (additional sites to be built)* | | | |
| Small Tent Sites (109) | $1,286,200 | $185,300 | $1,471,500 |
| Large Tent Sites (24) | $382,320 | $55,080 | $437,400 |
| Small Campgrounds (0) | n/a | n/a | n/a |
| Group Campsites (4) | $944,000 | $116,000 | $1,060,000 |
| Houseboat Sites (30) | $38,640 | $5,910 | $44,550 |
| Day Use (17) | $63,720 | $9,180 | $72,900 |
| Hut-to-Hut System (huts) | n/a | n/a | n/a |
| Subtotal | $2,714,880 | $371,470 | $3,086,350 |
| *Trails* | | | |
| Bike Lanes (4 miles) | $410,640 | $58,160 | $468,800 |
| Hiking Trails (48 miles) | $788,004 | $113,526 | $901,530 |
| Kabetogama to Ash River Trail | n/a | n/a | n/a |
| Rainy Bay Snowmobile Portage | n/a | n/a | n/a |
| Subtotal | $1,198,644 | $171,686 | $1,370,330 |
| **Renovate Snowmobile Portages** | | | |
| Moose Bay Portage | n/a | n/a | n/a |
| Mukooda Snowmobile Portage | n/a | n/a | n/a |
| Subtotal | n/a | n/a | n/a |
| **Studies/Plans** | | | |
| Campsite Monitoring Study | | | n/a |
| Comprehensive Interpretive Plan | | | $125,000 |
| Comprehensive Maintenance Program/Plan | | | n/a |
| Delineate Park Boundaries | | | n/a |
| Disturbed Land Restoration Plan | | | n/a |
| Fee/Permit/Reservation Feasibility Study | | | n/a |
| Fisheries Management Plan | | | n/a |

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| [redacted] | | | |
|---|---|---|---|
| Inventory and Monitoring | | | n/a |
| Lakecountry and Backcountry Site Management Plan | | | n/a |
| Land Protection Plan | | | n/a |
| Natural Resource Monitoring | | | n/a |
| Primitive Area and Proposed Wilderness Management Plan | | | n/a |
| Research Plan | | | n/a |
| Resource Management Plan | | | n/a |
| Trails Plan | | | n/a |
| Vegetation Management Plan | | | n/a |
| Water Resources Management Plan | | | n/a |
| Wildland Fire Management Plan | | | n/a |
| Subtotal | | | $185,000 |
| **Programs** | | | |
| Interpretation of Voyageurs' Routes | | | n/a |
| Visitor Orientation Exhibits (at dockside) | | | n/a |
| Visitor Experience and Resource Monitoring | | | n/a |
| Subtotal | | | n/a |
| **Staffing (increase)** | | | |
| Full-time employees | | | n/a |
| Seasonal employees | | | n/a |
| Subtotal | | | n/a |
| TOTAL | $5,804,001 | $856,005 | $6,679,006 |

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# MODIFIED PROPOSED ACTION

Note: The following costs are 2001 general estimates for comparison with the other alternatives. They are not intended to be used as a budget document.

| [redacted] | [redacted] | [redacted] | [redacted] |
|---|---|---|---|
| **Repair and Rehabilitation** | | | |
| Retain Historic Properties (18–20) | $1,031,414 | $148,694 | $1,180,108 |
| Subtotal | $1,031,414 | $148,694 | $1,180,108 |
| **New Construction** | | | |
| *Structures/Related Features* | | | |
| Ash River Operations Area Expansion | $265,500 | $38,250 | $303,750 |
| Crane Lake Multi-agency Visitor Center | $472,000 | $68,000 | $540,000 |
| Environmental Education Facility | n/a | n/a | n/a |
| Kettle Falls Waterstation | $147,500 | $21,250 | $168,750 |
| Natural/Cultural Resource Visitor Destinations (15–20) | $1,391,220 | $200,430 | $1,591,650 |
| Nonmotorized Boat Launches (3) | $53,100 | $7,650 | $60,750 |
| Outdoor Amphitheater at Ash River Visitor Center (1) | n/a | n/a | n/a |
| Outdoor Exhibits at Ash River Visitor Center | $153,400 | $22,100 | $175,500 |
| Subtotal | $2,482,720 | $357,680 | $2,840,400 |
| *Developed Overnight and Day Use Sites (additional sites to be built)* | | | |
| Small Tent Sites (17) | $200,600 | $28,900 | $229,500 |
| Large Tent Sites (12) | $191,160 | $27,540 | $218,700 |
| Small Campgrounds (0) | n/a | n/a | n/a |
| Group Campsites (3) | n/a | n/a | n/a |
| Houseboat Sites (20) | $28,556 | $4,114 | $32,670 |
| Day Use (17) | $63,720 | $9,180 | $72,900 |
| Hut-to-Hut System (huts) | n/a | n/a | n/a |
| Subtotal | $484,036 | $69,734 | $553,770 |
| *Trails* | | | |
| Bike Lanes (4 miles) | $410,640 | $59,160 | $469,800 |
| Hiking Trails (15.5 miles) | $256,060 | $36,890 | $292,950 |
| Kabetogama to Ash River Trail (33 miles) | $280,840 | $40,460 | $321,300 |
| Rainy Bay Snowmobile Portage | $59,000 | $8,500 | $67,500 |
| Subtotal | $1,006,540 | $145,010 | $1,151,550 |
| **Relocate Snowmobile Portages** | | | |
| Moose Bay Portage | $11,800 | $1,700 | $13,500 |
| Mukooda Snowmobile Portage | $11,800 | $1,700 | $13,500 |
| Subtotal | $23,600 | $3,400 | $27,000 |
| **Studies/Plans** | | | |
| Archeological Resources Protection Plan | | | $50,000 |
| Campsite Monitoring Study | | | $135,000 |
| Comprehensive Interpretive Plan | | | $125,000 |
| Comprehensive Maintenance Program/Plan | | | $75,000 |
| Delineate Park Boundaries | | | $200,000 |
| Disturbed Land Restoration Plan | | | $50,000 |
| Education and Outreach Plan | | | $20,000 |
| Fisheries Management Plan | | | $100,000 |
| Houseboat Management Plan | | | $250,000 |
| Inventory and Monitoring Plan | | | $30,000 |

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|---|---|---|---|
| Lakeshore and Backcountry Site Management Plan | | | [illegible],000 |
| Land Protection Plan | | | $10,000 |
| Media Development Plan | | | $20,000 |
| Natural Resource Monitoring | | | $300,000 |
| Oversight Permit System and Facility Use Fee Feasibility Study | | | $270,000 |
| Primitive Area and Proposed Wilderness Management Plan | | | $50,000 |
| Research Plan | | | $50,000 |
| Resource Management Plan | | | $30,000 |
| Trails Plan | | | $50,000 |
| Vegetation Management Plan | | | $100,000 |
| Water Resources Management Plan | | | $60,000 |
| Wildland Fire Management Plan | | | $50,000 |
| Subtotal | | | $2,[illegible]00 |
| **Programs** | | | |
| Interpretation of Voyageurs' Routes | | | $10,000 |
| Visitor Orientation Exhibits (at dockside) | | | $80,000 |
| Visitor Experience and Resource Monitoring | | | $300,000 |
| Subtotal | | | $3[illegible],000 |
| **Staffing (increase)** | | | |
| Full-time employees (25) | | | $1,[illegible],106 |
| Seasonal employees (22) | | | $3[illegible]31 |
| Subtotal | | | $1,72[illegible]37 |
| TOTAL | $5,[illegible]10 | $7[illegible]18 | $[illegible]15 |

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## ALTERNATIVE 2

Note: The following costs are 2004 gross cost estimates for comparison with the other alternatives. They are not intended to be used as a budget document.

| [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|
| **Repair and Rehabilitation** | | | |
| Rehabilitation Projects (27) | $2,[illegible].88 | $3[illegible].94 | $[illegible].32 |
| Subtotal | $[illegible].38 | $3[illegible].94 | $[illegible].32 |
| **New Construction** | | | |
| *Developed Area Facilities* | | | |
| Ash River Operations Area Expansion | $285,600.00 | $38,259.50 | $323,859.50 |
| Crane Lake Multi-Agency Visitor Center | $422,000.00 | $58,000.00 | $540,000.00 |
| Environmental Education Facility | n/a | n/a | n/a |
| Kettle Falls Rehabilitation | $167,500.00 | $21,259.50 | $188,759.50 |
| Natural/Cultural Resource Visitor Destinations | $1,078,100.00 | $155,250.50 | $1,233,350.50 |
| Non-motorized Boat Launches | $58,300.00 | $7,459.50 | $65,759.50 |
| Outdoor Amphitheater at Ash River Visitor Center | n/a | n/a | n/a |
| Outdoor Exhibits at Ash River Visitor Center | $153,400.00 | $22,100.00 | $175,500.00 |
| Subtotal | $2,171,[illegible].00 | $3[illegible].00 | $2,[illegible].00 |
| *Developed Campsites and Day Use Sites (additional sites to be built)* | | | |
| Small Tent Sites (10) | $138,000.00 | $17,000.00 | $155,000.00 |
| Large Tent Sites (11) | $175,220.30 | $25,255.45 | $200,475.75 |
| Small Campgrounds (0) | n/a | n/a | n/a |
| Group Campsites (0) | n/a | n/a | n/a |
| Houseboat Sites (2) | $2,599.96 | $377.74 | $2,977.70 |
| Day Use (6) | $24,759.80 | $3,[illegible].70 | $28,259.50 |
| Hybrid Use Sites (n/a) | n/a | n/a | n/a |
| Subtotal | $3[illegible].06 | $4[illegible].89 | $3[illegible].95 |
| *Trails* | | | |
| Bike Lanes (4 miles) | $410,840.40 | $58,159.60 | $469,000.00 |
| Hiking Trails ([illegible]) | n/a | n/a | n/a |
| Kabetogama to Ash River Trail (23 miles) | $280,840.40 | $40,959.60 | $321,800.00 |
| Rainy Bay Snowmobile Portage | $59,800.00 | $8,000.00 | $67,800.00 |
| Subtotal | $7[illegible].80 | $10[illegible].20 | $[illegible].00 |
| **Relocate Snowmobile Portages** | | | |
| Moose Bay Portage | $11,600.00 | $1,700.00 | $13,300.00 |
| Mukooda Snowmobile Portage | $11,600.00 | $1,700.00 | $13,300.00 |
| Subtotal | $2[illegible].00 | $3,[illegible].00 | $2[illegible].00 |
| **Studies/Plans** | | | |
| Campsite Monitoring Study | | | $185,000.00 |
| Comprehensive Interpretive Plan | | | $185,000.00 |
| Comprehensive Maintenance Program/Plan | | | $75,000.00 |
| Delineate Park Boundaries | | | $280,000.00 |
| Disturbed Land Restoration Plan | | | $50,000.00 |
| Fee/Permit/Reservation Feasibility Study | | | $250,000.00 |
| Fisheries Management Plan | | | $100,000.00 |
| Inventory and Monitoring Plan | | | $30,000.00 |
| Lakeshore and Backcountry Site Management Plan | | | $50,000.00 |
| Land Protection Plan | | | $10,000.00 |
| Natural Resource Monitoring | | | $300,000.00 |

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| | | | |
|---|---|---|---|
| [redacted] | | | |
| Pr[illegible] Resources Management Plan | | | [illegible]00 |
| Research Plan | | | [illegible]00 |
| Resource Management Plan | | | [illegible]00 |
| Trails Plan | | | [illegible]00 |
| Vegetation Management Plan | | | $1[illegible]00 |
| Water Resources Management Plan | | | [illegible]00 |
| Wildland Fire Management Plan | | | [illegible]00 |
| Subtotal | | | $1,[illegible]00 |
| **Programs** | | | |
| Interpretation of Voyageurs' Routes | | | [illegible]00 |
| Visitor Orientation Exhibits (at [illegible]) | | | [illegible]00 |
| Visitor Experience and Resource Monitoring | | | $3[illegible]00 |
| Subtotal | | | [illegible]00 |
| **Staffing (increase)** | | | |
| Full-time employees (28) | | | $1,[illegible]74 |
| Seasonal employees (22) | | | $3[illegible]81 |
| Subtotal | | | $1,[illegible]55 |
| TOTAL | $[illegible]24 | [illegible]03 | $1[illegible]32 |

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# ALTERNATIVE B

Note: The following costs are 2001 gross estimates for comparison with the other alternatives. They are not intended to be used as a budget document.

| | | | |
|---|---|---|---|
| **Repair and Rehabilitation** | | | |
| Rehab Historic Properties (21) | $1,203,917 | $173,359 | $1,377,276 |
| Subtotal | $1,203,917 | $173,359 | $1,377,276 |
| **New Construction** | | | |
| *Structures/Site Features* | | | |
| Ash River Operations Area Expansion | $265,500 | $38,250 | $303,750 |
| Crane Lake Multi-Agency Visitor Center | $472,000 | $68,000 | $540,000 |
| Environmental Education Facility | $507,400 | $73,100 | $580,500 |
| Kettle Falls Revegetation | $167,000 | $21,250 | $188,250 |
| Natural/Cultural Resource Visitor Destinations | $1,511,580 | $217,670 | $1,729,250 |
| Nonmotorized Boat launches | $53,100 | $7,650 | $60,750 |
| Outdoor Amphitheater at Ash River Visitor Center | $29,500 | $4,250 | $33,750 |
| Outdoor Exhibits at Ash River Visitor Center | $153,400 | $22,100 | $175,500 |
| Subtotal | $3,159,480 | $452,270 | $3,611,750 |
| *Developed Overnight and Day Use Sites (additional sites to be built)* | | | |
| Small Tent Sites (91) | $1,073,800 | $154,700 | $1,228,500 |
| Large Tent Sites (15) | $238,350 | $34,425 | $272,775 |
| Small Campgrounds (2) | $177,000 | $25,500 | $202,500 |
| Group Campsites (4) | $944,000 | $136,000 | $1,080,000 |
| Houseboat Sites (42) | $54,516 | $7,854 | $62,370 |
| Day Use (17) | $63,720 | $9,180 | $72,900 |
| Hut-to-Hut System (huts) | $8,850 | $1,275 | $10,125 |
| Subtotal | $2,560,236 | $368,934 | $2,929,170 |
| *Trails* | | | |
| Bike Lanes (4 miles) | $418,640 | $59,360 | $478,000 |
| Hiking Trails (44 miles) | $789,004 | $113,526 | $902,530 |
| Kabetogama to Ash River Trail (27 miles) | $280,840 | $40,460 | $321,300 |
| [illegible] Bay Snowmobile Portage | $59,000 | $8,000 | $67,000 |
| Subtotal | $1,547,484 | $221,346 | $1,768,830 |
| **Relocate Snowmobile Portages** | | | |
| Moose Bay Portage | $11,800 | $1,700 | $13,500 |
| Mukooda Snowmobile Portage | $11,800 | $1,700 | $13,500 |
| Subtotal | $23,600 | $3,400 | $27,000 |
| **Studies/Plans** | | | |
| Campsite Monitoring Study | | | $185,000 |
| Comprehensive Interpretive Plan | | | $125,000 |
| Comprehensive Maintenance Program/Plan | | | $75,000 |
| Delineate Park Boundaries | | | $299,000 |
| Disturbed Land Restoration Plan | | | $50,000 |
| Fee/Permit/Reservation Feasibility Study | | | $219,700 |
| Fisheries Management Plan | | | $150,000 |
| Inventory and Monitoring Plan | | | $30,000 |
| Lakecountry and Backcountry Site Management Plan | | | $50,000 |
| Land Protection Plan | | | $10,000 |
| Natural Resource Monitoring | | | $50,000 |

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| [illegible] | [illegible] | [illegible] | [illegible] |
|---|---|---|---|
| Primitive Area and Proposed Wilderness Management Plan | | | [illegible] |
| Research Plan | | | [illegible] |
| Resource Management Plan | | | [illegible] |
| Trails Plan | | | [illegible] |
| Vegetation Management Plan | | | [illegible] |
| Water Resources Management Plan | | | [illegible] |
| Wildland Fire Management Plan | | | [illegible] |
| Subtotal | | | [illegible] |
| **Programs** | | | |
| Interpretation of Voyageurs' Routes | | | [illegible] |
| Visitor Orientation Exhibits (at airports) | | | [illegible] |
| Visitor Experience and Resource Monitoring | | | [illegible] |
| Subtotal | | | [illegible] |
| **Staffing (increase)** | | | |
| Full-time employees (27) | | | [illegible] |
| Seasonal employees (20) | | | [illegible] |
| Subtotal | | | [illegible] |
| TOTAL | [illegible] | [illegible] | [illegible] |

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# APPENDIX E: THREATENED AND ENDANGERED SPECIES AND SPECIES OF SPECIAL CONCERN

### FEDERAL ENDANGERED SPECIES

Peregrine falcon (*Falco peregrinus*)

### FEDERAL THREATENED SPECIES

Bald Eagle (*Haliaeetus leucocephalus*)
Canada lynx (*Lynx canadensis*)
Gray wolf (*Canis lupus*)

### STATE ENDANGERED SPECIES

**Fauna**

May pass through the park but rarely seen:
    Piping Plover (*Charadrius melodus*)
    Peregrine falcon (see above)

**Flora**

Floating marsh marigold (*Caltha natans*)

Identified in the park historically, but no evidence of new populations:
    Awlwort (*Subularia aquatica*) -- endangered
    Lichen (*Pseudocyphellaria crocata*)

### STATE THREATENED SPECIES

**Fauna**

Common tern (*Sterna hirundo*)

Species that very rarely pass through the park:
    Wilson's phalarope (*Phalaropus tricolor*)
    Horned Grebe (*Podiceps auritus*)

**Flora**

Pigmyweed (*Tillaea* or *Crassula aquatica*)
Bog bluegrass (*Poa paludigena*) may also occur in the park (NPS 1999).

### STATE SPECIES OF SPECIAL CONCERN

**Fauna**

Northern bog lemming (*Synaptomys borealis*)
Lake sturgeon (*Acipenser fulvescens*)
White pelican (*Pelecanus erythrorhynchos*)
Snapping turtle (*Chelydra serpentina*)

Occasionally pass through the park while migrating:
    Short-eared owl (*Asio flammeus*),
    Yellow rail (*Coturnicops noveboracensis*) and
    Marbled godwit (*Limosa fedoa*)

**Flora**

Vasey's pondweed (*Potamogeton vaseyi*)
Lapland buttercup (*Ranunculus lapponicus*)
American shore-plantain (*Littorella americana*)
May occur in the park:
    Autumn sedge (*Fimbristylis autumnalis*) or
    Curved-leaved golden moss (*Tomenthypnum falcifolium*)
    lichen (*Sticta fuliginosa* and *Cladonia pseudorangiformis*)

In addition to these formally recognized species, the park is host to more than 120 species of lichen (of 400 taxa collected in the park; Wetmore, 1981) that are rare or newly discovered in Minnesota (NPS 1999).

**Wildlife Species Managed or Monitored by the Park**

Ungulates (Moose and deer)
Beaver
Black bear
Osprey
Common loon
Colonial nesting waterbirds (cormorants, gulls, herons)

# APPENDIX F: LAKECOUNTRY AND BACKCOUNTRY SITE MANAGEMENT PLAN (EXCERPTS)

1

## LAKECOUNTRY AND BACKCOUNTRY
## SITE MANAGEMENT PLAN

Voyageurs National Park
Minnesota

1988

## SUMMARY

Types and Numbers of Developed Sites. The National Park Service will designate and develop a number of watercraft accessible campsites and day use sites in Voyageurs National Park to meet existing and projected recreational needs. These sites will include developed and undeveloped campsites and abandoned cabin sites that meet the site selection criteria described in Appendix B. About 300 undeveloped campsites and cabin sites will be converted, thereby bringing Voyageurs' total number of developed sites to approximately 400. A minimum of 25 of the 400 developed sites will be exclusively for day users where overnight camping will not be permitted. A minimum of 100 sites will be exclusively for use by houseboaters who do not need to set up a tent on shore and want a wood fire. A minimum of 250 sites will be available for tent camping by hikers, skiers, canoeists, snowmobilers, motorboaters, or houseboaters. A minimum of three small campgrounds will be maintained. A minimum of 4 group campsites will be available for organized groups on Kabetogama, Rainy, and Sand Point lakes.

Overnight Use Limited to Developed Sites. No earlier than 1990, all overnight visitors who set up tents on shore or build wood fires will use one of Voyageurs' developed campsites. The only overnight visitors not required to use the park's developed campsites are those who are traveling away from maintained trails and portage routes in the backcountry; boats that must anchor in deeper water away from shore for the night; and houseboaters who do not want to set up a tent on shore or build a wood fire.

Overnight Houseboat Use. Houseboaters who wish to build a wood fire while camped for the night will use one of Voyageurs' developed houseboat sites. Houseboaters who wish to set up a tent while camped for the night will use one of the park's developed tent sites. Houseboaters not building a wood fire or setting up a tent on shore may moor anywhere in the park except: (1) within navigation channels, narrow channels that provide passage between or through lakes, and the vistas from scenic overlooks and visitor centers; (2) where

2

less than 1/4 mile line-of-sight distance separates a houseboat from any of the park's designated campsites; (3) within stands of floating or emergent vegetation located in shallow water; and (4) within 1/4 mile of active bald eagle and osprey nests, 200 feet of active loon nests and colonial nesting waterbird rookeries, and on islands closed to protect calving areas.

Day Use Activities. A minimum of 25 of the park's developed sites will be exclusively for day users where overnight camping will not take place. Visitors may also use unoccupied developed campsites for a variety of recreational day use activities. Day users will vacate unoccupied campsites by 4 p.m. so that potential overnight users may have access to these sites. Day use will continue at all undeveloped locations in the park if visitors do not build wood fires. Day users may build fires if they use one of Voyageurs' designated sites.

Party Size Limits at Developed Sites. Small campsites will accommodate up to nine people. Large campsites will accommodate up to 18 people. Small campgrounds will accommodate a maximum of five to seven individual groups with nine people per party. Groups with more than nine people can also use campgrounds if they break into parties of nine or less and occupy two or more individual sites. Group campsites will generally accommodate up to seventy-two people. Houseboat sites will accommodate two houseboats. Most day use sites will accommodate two groups of nine people simultaneously. A few day use sites, however, will accommodate simultaneously 49 tour boat passengers or other large parties and several smaller day use groups that are not using the tour boat, such as Anderson Bay.

Camping Permit/Reservation System. When use reaches a level where competition for sites is high, a camping permit/reservation system will be implemented. At that time, all tent campers and houseboaters will be required to obtain a camping permit for each overnight trip into Voyageurs' lakecountry and backcountry environments. All other boats, such as sailboats and cabin cruisers, that anchor for the night away from shore must also obtain a permit.

Wood Fires and Wood Gathering. Wood fires will be permitted only in metal firegrills at Voyageurs' designated sites. Fire use will be allowed as long as fuelwood is adequate to satisfy user needs and wood gathering does not impact site resources. Sites where wood is depleted will be closed to wood fires. Although wood fires will be permitted, wood gathering at the park's small campgrounds and group campsites will be prohibited; users must bring their own wood from outside the park or collect it more than a 1/4 mile away from their site.

Visitors using any site closed to wood fires must use stoves or charcoal in firepans for cooking and warmth. Backcountry campers who are traveling away from maintained trails and developed campsites must also use stoves for cooking and warmth. Wood gathering will be limited to dead and down material collected more than 200 feet from small and large campsites, houseboat sites, and day use sites. The use of chain saws for cutting wood is prohibited.

Temporary Site Closures to Protect Wildlife and Visitors. Areas will continue to be temporarily closed to protect the denning, nesting, calving, foraging and brood-rearing habitats of threatened and special concern species, such as the eastern timber wolf, bald eagle, osprey, common loon, common tern, deer and moose. Temporary site or area closures will be lifted either when the den, nest or colony fails, or the young are fledged or weaned. Campsites and day use sites that are involved with human-bear problems may also be temporarily closed. Sites may be temporarily closed in response to the presence of prescribed natural fires or prescribed burns, special habitat requirements of ungulates, or accelerated erosion that releases archeological materials.

Schedule for Implementing the Site Management Program. Implementation of this site management program will require a phased approach due to funding and manpower constraints, the presence of abandoned cabins and debris on some sites, the presence of retained use and occupancy cabins on others, and the presence of private cabins that have not yet been acquired by the National Park Service. The schedule for implementing this site management program is outlined below.

A. Beginning in the summer of 1988, campsites that are badly impacted or have public health limitations will be permanently closed and restored to natural conditions. Some of these sites will be converted to houseboat sites or day use sites. Facilities will be removed from campsites that will be permanently closed. Appropriate facilities will be installed at campsites that will be converted to houseboat or day use sites. Metal firegrills will be removed from sites where wood fires are prohibited. Bear-proof food storage lockers will continue to be installed at campsites frequented by bears. Appropriate signing will be placed at areas closed to fires or camping.

B. As funding permits, new developed campsites and day use sites will be created from among the park's undeveloped campsites and cabin sites; several sites will be handicapped accessible. The highest priorities for campsite and day use site development will be on Rainy Lake west of Brule Narrows, and Kabetogama and Sand Point Lakes. Funding for an accelerated construction program will be pursued so that all sites identified for long-term management will possibly be developed within 5 years, except those sites encumbered with retained use and occupancy leases or private cabins.

C. By the summer of 1990, there will be enough sites either developed or designated to accommodate all overnight use. Sites not yet developed will be signed and a metal firegrill installed; the park's camping and hiking brochure will identify where these sites are located and the level of facility development at each site. At that time, overnight users will be required to camp at designated sites. Day users who want to build a wood fire must likewise use designated sites.

D. Beginning no earlier than the summer of 1992, if overnight use reaches a level where competition for developed and designated sites is high, a camping permit/reservation system will be implemented.

[Editor's Note: Pages 4–5 of the plan are not reprinted.]

6

## MANAGEMENT PROBLEM

Lakeside camping and picnicking have been traditional uses in Voyageurs National Park and vicinity for thousands of years. Members of the Archaic culture hunted bison and mammoth along the receding shoreline of glacial Lake Agassiz 6000 years ago. People from Laurel (1000 BC to 800 AD) and then Blackduck (800 AD to 1500 AD) cultures were gathering berries and wild rice, and hunting and fishing along the park's lakeshores for several thousand years. For a century and a half, with the assistance of the Ojibway Indians, French-Canadian voyageurs plied this maze of lakes and streams in frail birch bark canoes and transported vast quantities of furs and goods between Montreal and the far Northwest.

During the last 90 years, however, the means used to access the park's campsites and desirable day use sites and the number of people using them has changed dramatically. Today large numbers of visitors use motorboats and houseboats to gain easy access to lakeside campsites and day use sites or trailheads leading to them. One can be at the most remote backcountry campsite within three to four hours after leaving any population center on the park perimeter. Visitors can fly from local seaplane bases to most park campsites in less than one hour.

When recreational camping and day use became popular in wilderness water areas prior to the establishment of Voyageurs, few developed campsites or day use sites were available to accommodate user needs. Most campers and day users established the tradition of camping or picnicking on the most desirable sites regardless of ownership or site durability. The Minnesota Department of Natural Resources and the U.S. Forest Service were the first public agencies to provide developed sites within the future park to meet increasing user needs. As resorts developed and houseboat businesses opened, visitor demands for campsites and day use sites heightened. Private ownership and state leases for summer cabins increased so new campsites were continually being established to replace lost areas. Boise Cascade Corporation responded by developing thirty-three campsites (and portage trails to them) on what were then corporate lands during the decade prior to creation of the park.

Severe localized ecological impacts result from recreational use of Voyageurs' 600 campsites and day use sites, even when there is only minimal use of a site. Common impacts on vegetation at such sites are loss of ground cover, elimination of tree reproduction, damage to tree boles that increases their susceptibility to insect and disease attack, loss of overstory trees, changes in species composition toward more trampling-resistant species, invasion by exotic plant species, and threats to rare plant species and communities. Common impacts on soils are loss of organic layers, increase in exposed mineral soil, increased soil compaction, and soil erosion that exposes tree roots and rocks.

Water quality is also degraded in the immediate vicinity of Voyageurs' recreation sites. Recreational use at campsites and day use sites results in changes in the distribution, abundance and behavior of a variety of wildlife species, particularly black bears. Many undeveloped campsites and day use sites, cabin sites, and some developed campsites are located on top of prehistoric and historic archeological sites. Many abandoned cabin sites that are suitable for long-term management as campsites or day use sites continue to be occupied by a variety of developments that were associated with their use as either year round residences, summer residences, resorts, or fish camps.

It is not unusual to have more visitors using Voyageurs' undeveloped than developed campsites during most summer periods. As a result, human waste, garbage and fish offal are not adequately managed and undesirable human-bear conflicts occur where food is not properly stored. Visitor use is currently exceeding the capacity of the natural environment or physical facilities to adequately absorb a variety of recreational impacts on some developed and undeveloped campsites and day use sites. Although signs and park literature encourage campers to use developed campsites, there is no policy restricting camping to these sites only.

Conflicts frequently occur between Voyageurs' diverse user groups. Competition for the limited number of developed sites commonly occurs between houseboat users, tent campers and day users. Houseboaters may occupy a developed site for mooring protection but not use its facilities. Day users frequently occupy developed campsites during the day or have difficulty finding a picnic site because all suitable sites are occupied by tent campers and houseboaters. Day users must use unoccupied developed or undeveloped campsites since there are no developed day use sites in the park at this time. Consequently, tent campers must use undeveloped campsites or create new ones. Few group campsites exist in the park, so single unit campsites are often expanded and their physical capacity exceeded.

B

## GOALS AND MANAGEMENT OBJECTIVES

The impacts on the park's natural and cultural resources, and the conflict between different types of users described above are incompatible with Voyageurs National Park's purpose "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (Public Law 91-661). According to the park's enabling legislation, management actions must "preserve, for the inspiration and enjoyment of present and future generations, the outstanding scenery, geological conditions, and waterway system which constituted a part of the historic route of the Voyageurs."

National Park Service Management Policies states that "campsites may be designated to protect park resources from deterioration from indiscriminate camping. Other improvements, such as fireplaces, shelters, privies, and picnic tables, may be provided if they aid in protection of the resources. The use of open camp and cooking fires may be prohibited in areas where the management goal is wide dispersion of users, restoration at overused sites, or where the evidence of previous campers (charcoal, fire-rings, etc.) would detract from the quality of experience, or where sufficient firewood is not generally available. Management of the backcountry requires a system for limiting and directing use where overuse is adversely affecting the resources or the user's experience" (U.S. NPS 1978: VII-11). "Reservation systems may be employed when the demand for camping periodically or chronically exceeds the number of campsites" (ibid., 13). "Organized group campsites or campgrounds may be developed and managed in parks where such use is desirable and beneficial to the enjoyment of the park resources" (ibid., 12).

The goals for lakecountry and backcountry site management at Voyageurs are to: (1) maintain the integrity of natural ecological processes; (2) protect and preserve historic and prehistoric cultural resources; (3) provide for satisfying experiences consistent with legislation, policy and social demands; and (4) confine visitor impacts on recreation sites to acceptable levels.

The objectives for Voyageurs' lakecountry and backcountry site management program are listed below under the applicable site management goal. In meeting these objectives, the Service will comply with the legislation governing Voyageurs National Park and the National Park Service.

1. **Maintain the integrity of natural ecological processes:**

   A. Maintain, perpetuate and restore natural ecosystem processes at work in the park's lakecountry and backcountry environments.

   B. Restore and perpetuate naturally occurring plant and animal species in the vicinity of campsites and day use sites.

   C. Protect endangered, threatened, and special concern species of plants and animals; and rare plant communities from disturbance by campers and day users, particularly the threatened eastern timber wolf and bald eagle.

D. Maintain acceptable water and air quality in this federal Class I area.

E. Conduct a fire prevention program in cooperation with other agencies to protect human life, physical facilities, cultural resources, and prevent modification of park ecosystems by excessive human-caused wildfire.

2. Protect and preserve historic and prehistoric resources:

A. Permit only those developments which are compatible with the preservation of the park's historic and prehistoric cultural resources in the vicinity of campsites and day use sites.

B. Ensure that cultural resource inventories have been conducted prior to removal of abandoned cabins or debris and construction of facilities.

C. Ensure that all design and construction measures at campsites and day use sites avoid or minimize impairments to cultural resources.

3. Provide for satisfying experiences consistent with legislation, policy, and social demands:

A. Promote visitor enjoyment of the park by providing campsites and day use sites that offer rewarding experiences and opportunities to enjoy various examples of natural, cultural, and scenic resources for the greatest number of visitors compatible with resources protection and visitor safety.

B. Provide maximum opportunities for visitor solitude and privacy in a natural setting with minimum restrictions and where the imprint of man is substantially unnoticeable.

C. Recreation opportunities in the park will be managed for relatively homogeneous groups of visitors, thereby minimizing user group conflicts and increasing the park's social capacity.

D. Obtain objective and systematically collected information about what affects satisfaction so the park can meet visitor needs.

4. Confine visitor impacts on recreation sites to acceptable levels:

A. Plan campsites and day use sites that blend with the topography and the environment and that minimize adverse effects on cultural and natural resources, including threatened and rare species.

10

B. Predicate campsite and day use site management in the park on documented data obtained through appropriate investigation, monitoring and research.

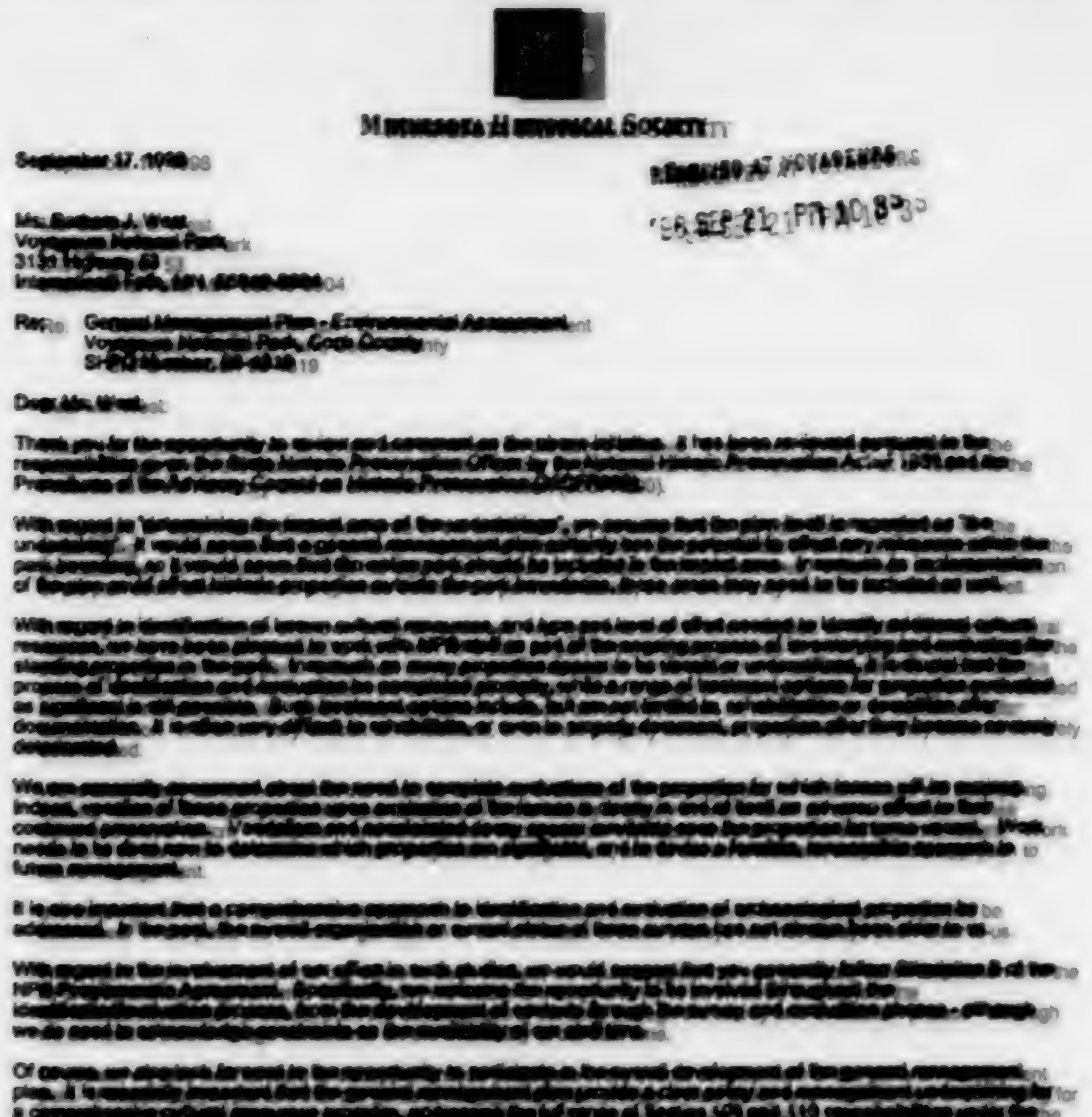
C. Improve standard techniques for constructing and rehabilitating campsites and day use sites that will be capable of restoring and maintaining park ecosystems and protecting cultural resources.

D. Design campsites and day use sites that are cost effective to construct and efficient to maintain.

Attainment of these goals and objectives in Voyageurs' lakecountry and backcountry environments will be accomplished by implementing a site management program that has two major components: (1) developed site management; and (2) visitor management. Developed site management will use management of where visitor use occurs, as well as physical manipulation of the site itself. Visitor management on the other hand will use regulation, information, and education to influence the number, type, distribution, and behavior of visitors. The actions necessary to implement these two site management components are described below.

Specific operational standards, guidelines and procedures for constructing and rehabilitating developed sites, maintaining sites, closing and restoring undesignated sites, issuing camping permits/reservations, enforcing regulations, and research and monitoring are yet to be developed. When developed they will be appended to this site management plan.

# APPENDIX G: CULTURAL RESOURCE CONSULTATION



MINNESOTA HISTORICAL SOCIETY

September 17, 1998

RECEIVED AT VOYAGEURS
'98 SEP 21 PM 10 35

Ms. Barbara J. West
Voyageurs National Park
3131 Highway 53
International Falls, MN 56649-8904

Re: General Management Plan - Environmental Assessment
Voyageurs National Park, Koochiching County
SHPO Number: 98-[illegible]19

Dear Ms. West:

Sincerely,

Dennis A. [illegible]
Government Programs & Compliance Officer

cc: Mary [illegible]

# GLOSSARY

**adaptive use:** a use for a structure or landscape other than its historic use, normally entailing some modification of the structure or landscape.

**Advisory Council on Historic Preservation:** an independent federal agency with statutory authority to review and comment on federal actions affecting properties listed in or eligible for the National Register of Historic Places.

**anthropology:** the scientific study of the human condition, including cultural, biological and physical adaptations over time and in various natural and social environments.

**archeology:** the scientific study, interpretation, and reconstruction of past human cultures from an anthropological perspective based on the investigation of the surviving physical evidence of human activity and the reconstruction of related past environments.

**Ash River operations area:** park operations area located along the entrance road to the Ash River visitor center; maintenance operations use this area the most, but other divisions also use it.

**blackwater:** household wastewater from onboard toilet facilities.

**boats-on-interior-lakes program (BOIL):** NPS-owned rowboats and canoes located on select interior lakes for use by visitors; visitors must reserve boats.

**Code of Federal Regulations (CFR):** Contains the codified regulations of federal agencies; title 36 applies national parks; section 7.33 is specific to Voyageurs National Park.

**Council on Environmental Quality (CEQ):** an independent federal agency with responsibility for implementing regulations to carry out the provisions of the National Environmental Policy Act.

**cultural landscape:** a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general kinds of cultural landscapes, not mutually exclusive: historic sites, historic designed landscape, historic vernacular landscape, and ethnographic landscape.

**cultural resource:** an aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice.

**cumulative impacts:** the culmination of the proposed action added to past, present, and reasonably foreseeable future actions; actions may be taken by anyone and may occur inside or outside the park.

**day use sites:** a developed site in Voyageurs National Park that cannot be used for overnight stays.

**endangered species:** a plant or animal that is in danger of becoming extinct throughout all or part of its range.

**environmental education:** programs that teach students of all ages and disciplines about the park's cultural and natural resources; usually means multiple contacts with the same group of learners; curriculum-based education programs are tied to state graduation standards.

**environmental impact statement (EIS):** required by the National Environmental Policy Act to examine a range of federal actions and their potential effects on the human environment.

**ethnography:** part of the discipline of cultural anthropology concerned with the systematic description and analysis of cultural systems or lifeways, such as hunting, agriculture, fishing, other food procurement strategies, family life, festivals and other religious celebrations.

**eutrophy:** a body of water in which the increase of mineral and organic nutrients has reduced the dissolved oxygen, producing an environment that favors plant over animal life.

**fire use:** the combination of wildland fire use and prescribed fire application to meet resource objectives.

**fishing harvest:** the number of fish caught and kept.

**fishing pressure:** a measurement that considers both the number of people fishing and the length of time they fish.

**fixed-wing aircraft:** floatplane or ski plane configured aircraft.

**full-time equivalents:** staff positions that include 40 hours of work per week all year.

**general management plan (GMP):** the broadest level of planning used by the National Park Service; provides an overall direction for future park management as well as a framework for managers to use when making decisions about such things as park resources, visitor use, and facilities.

**graywater:** houseboat wastewater from onboard showers and sinks (kitchen and bathroom).

**group site:** a developed tent site in Voyageurs National Park that can accommodate a group of 30 people staying overnight; houseboaters are not allowed to use large campsites.

**historic district:** a geographically definable area, urban or rural, possessing a significant concentration, linkage, or continuity of sites, landscapes, structures, or objects, united by past events or aesthetically by plan or physical development.

**historic property:** a district, site, structure, or landscape significant in American history, architecture, engineering, archeology, or culture; an umbrella term for all entries in the National Register of Historic Places.

**houseboat:** for the purposes of this plan, a motorized vessel that a person can walk through standing upright, from bow to stern, and that has sleeping facilities, a bathroom (permanent or portable), and cooking facilities. Sailboats and cabin cruisers are not included in this definition. The proposed houseboat management plan could further address or modify this definition.

**houseboat site:** a developed site in Voyageurs National Park for overnight use by houseboaters only; tent campers are not allowed to use houseboat sites.

**interior lakes:** bodies of water found on the Kabetogama Peninsula or the mainland areas of the park.

**International Joint Commission (IJC):** established pursuant to the terms of the Boundary Waters Treaty of 1909 between the United States and Canada, has regulatory authority over Rainy Lake and Namakan Reservoir.

**interpretation:** a communication process designed to reveal meanings and relationships of cultural and natural heritage to the public through first-hand experiences with objects, artifacts, landscapes or sites; facilitating a connection between the interests of the visitor and the meaning of the park by explaining the park's purpose and significance; usually a single contact with a group or individual.

**large campsite:** a developed tent site in Voyageurs National Park that can accommodate up to 18 people staying overnight in tents; houseboaters are not allowed to use large campsites.

**main or major lakes:** the four major bodies of water found in the park — Kabetogama Lake, Namakan Lake, Rainy Lake, and Sand Point Lake.

**management areas:** park zones with specific visitor experience and resource protection guidelines.

**motorboat:** a boat propelled by an internal-combustion engine.

**molder:** to allow to decay naturally.

**Namakan District:** the land and water of the southern portion of the park.

**National Environmental Policy Act (NEPA):** Among other things, this act requires full disclosure of the impacts that would result from a proposed federal action that would have a major effect on the quality of the human environment.

**National Park Service (NPS)**

**natural quiet:** the sounds one would hear without interference of noise from unnatural sources.

**natural resources:** things that occur in their natural state – wildlife, water, forests, etc.

**no-wake:** operating a boat at a speed that does not cause waves behind the boat.

**nonhistoric cabin:** a building that is not significant in American history, architecture, engineering, archeology, or culture.

**outreach:** to go beyond the park boundary to develop partnerships with other organizations, other government entities and members of the general public in order to build relationships that foster stewardship; actively providing information and programs to groups or individuals who are not park visitors.

**prescribed fire:** any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition. This term replaces management ignited prescribed fire.

**preservation:** the act or process of applying measures necessary to sustain the existing form, integrity and materials of a historic structure, landscape, or object; generally is ongoing in nature involving repairs rather than extensive replacement and new work.

**proposed wilderness:** land recommended for designation as wilderness by Congress, based on a wilderness study submitted by a park or region, but which has not been approved by the Department and subsequently transmitted to Congress by the President; managed so as to not diminish wilderness characteristics.

**protect:** to keep from harm, attack, or injury; long-term efforts to deter or prevent vandalism, theft, or other acts.

**Rainy District:** the northern section of the park that encompasses all areas of Rainy Lake and its surrounding lands that are located in the park.

**restoration:** process of accurately depicting the form, features, and character of a historic property for a particular period of time; may involve removing features from other periods and adding missing features from the restoration period.

**rehabilitation:** the act or process of making possible an efficient compatible use for a historic structure or landscape through repair, alterations and additions while preserving those portions or features that convey its historical, cultural or architectural values.

**sanitation system:** the blackwater wastewater system on a houseboat.

**sanitation system certification:** documentation that a houseboat has an approved, operable blackwater wastewater containment system.

**scoping:** planning process that solicits people's opinions on the value of a park, issues facing a park, and the future of a park.

**small campsite:** a developed tent site in Voyageurs National Park that can accommodate up to 9 people staying overnight in tents; houseboaters are not allowed to use small campsites.

**southern transitional boreal forest:** mixed community areas of the park that lie between hardwood forests and conifer dominated boreal forests to the north.

**stabilization:** treatment action taken as an intervention to increase the stability or durability of an object when preventive conservation measures fail to decrease its rate of deterioration to an acceptable level or when it has deteriorated so far that its existence is jeopardized.

**state historic preservation officer (SHPO):** an official within each state appointed by the governor to administer the state historic preservation program and carry out certain responsibilities relating to federal undertakings within the state.

**structure:** a constructed work, usually immovable by nature or design, consciously created to serve some human activity; examples include cabins, mines, fences, and walkways.

**subject-to-furlough:** staff members who work only part of the year.

**Technical Information Educational Services (TIES):** a nonprofit consortium in Minnesota that provides technology and information resources to school administrators, educators, and students.

**threatened species:** a plant or animal that is likely to become an endangered species within the foreseeable future.

**treatment:** work carried out to achieve a particular historic preservation goal.

**United States Code (U.S.C.):** Contains the general and permanent laws of the United States.

**U.S.C. 1994 ed., Title 16, Subchapter I, §1a-7(b)(3):** Title 16: Conservation; *Subchapter I: National Park Service*, §1a-7. *National Park System development program*, (b) *general management plans; preparation and revision by Director of National Park Service; list to Congress; contents (3) identification of and implementation commitments for visitor carrying capacities for all areas of the unit.*

**visitor destination:** point of interest in the park established for day use visitation.

**visitor education:** conducting programs for park visitors or contacting visitors at visitor centers to teach them about park rules and regulations and to eventually influence their behavior at the park.

**visitor services:** providing information and assistance to park visitors to facilitate an enjoyable experience at the park (e.g., trip planning, emergency response, naturalist programs, etc.); to create opportunities for visitors to make intellectual and emotional connections to the park through such things as guided walks, roving informal contacts, brochures, exhibits and other media; services may be provided on-site or off-site.

**Visitor Use and Facilities Plan (VUFP):** plan directed by 1993 legislation.

**Wilderness Recommendation:** the document resulting from the process to determine the suitability of all lands and waters within Voyageurs National Park for wilderness designation.

**wildland fire:** any non-structure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

**wildland fire suppression:** an appropriate management response to wildland fire that results in the curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration, but minimize loss of resource values, economic expenditures, and/or the use of critical firefighting resources.

**wildland fire use:** the management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas as outlined in fire management plans. Operational management is described in the *Wildland Fire Implementation Plan* (WFIP). Wildland fire use is not to be confused with "fire use," which is a broader term encompassing more than just wildland fires.

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Abbreviations used in the text:

MDNR Minnesota Department of Natural Resources
MPCA Minnesota Pollution Control Agency
NADP National Atmospheric Deposition Program
NPS National Park Service
OMNR Ontario Ministry of Natural Resources
USFS U.S. Forest Service
USFWS U.S. Fish and Wildlife Service
USGS U.S. Geological Survey

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# INDEX

## A

air quality, 9, 16, 28, 45, 87, 104, 126, 127, 140, 144, 191, 192, 193, 199, 204, 205, 206, 246, 247, 249, 281, 309

archeological resources, xi, x, 2, 9, 19, 20, 26, 28, 41, 46, 47, 55, 56, 68, 76, 77, 89, 90, 112, 155, 158, 160, 195, 201, 202, 231, 232, 233, 261, 262, 291, 292, 322, 341

Ash River, v, vi, vii, ix, xi, xii, xiii, xiv, xv, 14, 15, 20, 21, 42, 43, 47, 48, 55, 62, 68, 70, 72, 76, 79, 81, 83, 90, 91, 95, 99, 104, 115, 118, 138, 164, 165, 166, 169, 177, 180, 181, 184, 186, 187, 192, 208, 215, 217, 238, 243, 250, 251, 264, 267, 268, 269, 272, 273, 282, 296, 300, 304, 310, 326, 331, 335, 341
  developed area, 95

Ash River operations area, xv, 65, 74, 102, 118, 180, 181, 274

Ash River visitor center, x, ix, 14, 15, 21, 42, 43, 49, 60, 70, 79, 96, 115, 118, 164, 166, 180, 181, 208, 243, 261, 269, 298, 310, 329, 332

## B

backcountry, v, xii, 14, 38, 39, 51, 81, 100, 104, 105, 109, 116, 168, 172, 174, 175, 189, 207, 209, 211, 212, 214, 223, 237, 241, 240, 250, 252, 254, 276, 278, 287, 289, 295, 305, 313, 316, 318, 328, 329, 330, 335, 336

bald eagles, x, xiv, 1, 110, 140, 146, 147, 149, 151, 174, 195, 224, 227, 228, 230, 231, 246, 247, 260, 261, 290, 291, 317, 319, 321, 337

bicycle and pedestrian access, 49, 60, 70, 79, 95

bicycles, 49, 60, 70, 79, 95, 238, 267, 296, 326

boat launches, 13, 35, 37, 95, 105, 165, 166, 238, 253, 254, 267, 276, 278, 285, 304, 306, 316

boats-on-interior-lakes (BOIL) program, 14, 42, 48, 59, 69, 76, 82, 86, 93, 109, 174, 224, 237, 246, 253, 266, 288, 289, 295, 306, 313, 318, 326

## C

camping, xi, 3, 14, 16, 18, 39, 44, 50, 60, 63, 65, 70, 72, 74, 79, 80, 81, 83, 95, 99, 104, 105, 109, 115, 117, 119, 129, 133, 158, 168, 171, 172, 173, 175, 176, 178, 184, 186, 207, 208, 209, 211, 212, 214, 223, 224, 226, 232, 239, 240, 247, 249, 250, 251, 252, 254, 255, 257, 259, 262, 267, 270, 271, 272, 281, 283, 284, 287, 297, 298, 299, 305, 306, 309, 310, 311, 312, 313, 316, 318, 319, 322, 327, 328, 329, 330, 335
  group campsites, 14, 49, 50, 60, 71, 238, 241, 281, 296, 299, 327, 330
  permits, 99, 104, 105, 251, 252, 254, 311, 312, 313
  tent sites, x, xv, 14, 16, 43, 47, 50, 56, 77, 97, 115, 172, 210, 232, 238, 267, 296, 309, 327, 329

campsites, x, xi, xiv, 13, 16, 17, 19, 39, 43, 50, 61, 70, 71, 80, 81, 96, 104, 105, 109, 115, 116, 133, 138, 144, 148, 150, 157, 158, 171, 172, 173, 175, 176, 180, 192, 194, 199, 200, 204, 207, 208, 209, 210, 211, 212, 214, 215, 221, 223, 224, 226, 227, 229, 230, 231, 232, 238, 239, 240, 247, 249, 250, 257, 259, 267, 271, 281, 287, 296, 297, 298, 309, 310, 311, 316, 320, 327, 328, 329, 335

Chain of Lakes, 39, 42, 69, 70, 93, 94, 110, 111, 174, 175, 224, 231, 237, 319, 321
  not suitable for wilderness, 25

concessions, xii, 15, 37, 44, 48, 51, 58, 64, 69, 73, 78, 79, 82, 93, 95, 100, 117, 165, 166, 167, 177, 178, 179, 197, 242, 272, 274, 277, 295, 309, 318, 325, 331

Crane Lake, x, vii, viii, ix, xii, xiv, 15, 16, 21, 30, 37, 43, 52, 60, 63, 64, 65, 66, 70, 74, 75, 79, 81, 83, 99, 101, 103, 115, 118, 140, 156, 157, 167, 169, 177, 179, 180, 181, 184, 185, 186, 187, 238, 243, 244, 251, 252, 267, 268, 269, 270, 272, 273, 274, 275, 296, 298, 299, 301, 302, 304, 326, 328, 329, 332, 333, 335, 341

Crane Lake ranger station, xi, 14, 15, 21, 43, 115, 118, 180, 238, 243

cultural landscapes, xi, x, 9, 10, 26, 37, 41, 46, 47, 55, 68, 76, 89, 90, 113, 159, 195, 234, 235, 264, 292, 323

cultural resources, v, iii, x, vi, viii, x, xii, xiii, xiv, 5, 9, 10, 15, 19, 25, 28, 35, 38, 41, 45, 46, 48, 52, 53, 55, 56, 59, 61, 65, 66, 67, 68, 69, 73, 76, 77, 78, 83, 89, 91, 94, 102, 112, 119, 155, 159, 160, 195, 201, 231, 232, 233, 239, 245, 246, 247, 261, 262, 263, 272, 275, 278, 279, 291, 292, 301, 302, 303, 305, 306, 307, 316, 322, 323, 332, 334, 336, 337

## D

day use, viii, ix, xiii, 17, 23, 35, 38, 43, 49, 60, 61, 62, 66, 70, 71, 79, 80, 96, 97, 109, 110, 115, 116, 117, 133, 144, 150, 164, 165, 166, 167, 172, 173, 174, 194, 199, 204, 211, 212, 214, 221, 232, 237, 238, 239, 246, 250, 254, 257, 258, 267, 268, 270, 273, 276, 278, 281, 283, 287, 291, 296, 297, 299, 303, 304, 309, 310, 312, 313, 315, 318, 319, 323, 327, 329, 334, 335

day use sites, ix, 13, 17, 23, 38, 43, 49, 61, 66, 71, 80, 96, 97, 109, 110, 171, 199, 204, 211, 214, 221, 232, 238, 239, 257, 258, 267, 269, 270, 276, 281, 296, 297, 304, 309, 323, 327, 334

destination sites, vii, viii, ix, 38, 50, 56, 61, 62, 68, 71, 77, 91, 98, 109, 110, 240, 257, 292, 296, 327

developed sites, vii, viii, ix, x, xi, xiii, 14, 43, 50, 60, 61, 62, 66, 70, 71, 79, 84, 97, 98, 104, 105, 109, 110, 112, 115, 116, 117, 138, 158, 164, 171, 172, 173, 192, 207, 208, 209, 215, 223, 239, 246, 247, 249, 250, 251, 252, 253, 257, 258, 259, 261, 262, 268, 270, 280, 281, 282, 283, 284, 287, 288, 289, 291, 297, 298, 299, 300, 308, 309, 310, 311, 312, 313, 315, 318, 327, 329, 330

VOGC

## E

educational [illegible], vii, viii, xii, xiv, 51, 54, 101, 118, 243, 244, 273, 277, 301, 306, 332, 336

Ellsworth [illegible], 42, 47, 48, 55, 68, 76, 90, 91, 159, 167, 234, 323

[illegible], xi, 42, 48, 53, 56, 69, 87, 91, 114, 119, 269, 274, 294, 301, 323, 328, 336

environmentally preferred alternative, 84

ethnographic resources, xi, x, 9, 28, 41, 46, 55, 67, 76, 89, 114, 159, 160, 161, 230, 265

## F

facility use fees, xii, 57, 69, 91, 114, 118, 236, 265, 269, 276, 280

fire management, xi, x, xiii, 9, 17, 26, 46, 54, 55, 65, 66, 67, 75, 76, 88, 102, 105, 199, 209, 210, 214, 222, 234, 245, 251, 254, 256, 282, 284, 311, 334

fire rings, xii, xiv, 23, 43, 50, 62, 71, 80, 87, 98, 116, 129, 171, 173, 239, 240, 268, 270, 273, 297, 298, 312, 327, 329

fires, 17, 18, 39, 50, 61, 62, 63, 71, 80, 81, 87, 98, 99, 105, 116, 132, 133, 134, 173, 204, 209, 210, 211, 214, 222, 239, 240, 251, 268, 269, 270, 272, 283, 296, 297, 298, 312, 327, 328, 329, 335

firewood, 16, 43, 50, 62, 80, 82, 98, 105, 116, 133, 200, 207, 208, 210, 211, 214, 222, 240, 250, 252, 268, 270, 281, 283, 287, 297, 298, 309, 312, 329

fisheries, xi, 9, 18, 27, 28, 34, 45, 66, 73, 75, 83, 87, 101, 108, 142, 144, 162, 171, 194, 200, 245, 246, 247, 256, 272, 277, 279, 289, 302, 314, 315, 334

fixed-wing aircraft, i, x, xi, xiv, xv, 1, 16, 35, 37, 39, 42, 48, 57, 58, 69, 78, 92, 104, 107, 109, 110, 115, 117, 119, 167, 168, 185, 211, 215, 221, 224, 225, 237, 241, 249, 270, 282, 288, 289, 297, 304, 309, 314, 315, 316, 317, 319, 321, 326, 329, 330, 337

forest management, 46, 54, 67, 76, 88

## G

gray wolves, x, 109, 111, 134, 146, 148, 152, 161, 174, 226, 228, 229, 232, 233, 240, 252, 260, 261, 292, 301, 320, 321

## H

hiking, ix, vi, xiii, xiv, 1, 37, 38, 39, 44, 50, 62, 80, 98, 111, 116, 131, 149, 150, 168, 171, 181, 200, 224, 229, 231, 244, 246, 268, 270, 297, 298, 312, 328, 329

historic structures, xi, 26, 28, 41, 47, 50, 56, 66, 68, 77, 79, 80, 88, 91, 95, 98, 112, 158, 166, 167, 178, 231, 234, 262, 265, 274, 276, 292, 293, 321, 323, 326, 331

houseboat sites, xiv, ix, 13, 43, 49, 50, 60, 61, 69, 70, 71, 77, 79, 80, 92, 96, 97, 113, 164, 169, 172, 173, 238, 261, 266, 284, 285, 290, 309, 327, 329

houseboats, x, vi, vii, xi, xii, xiii, 14, 17, 23, 31, 37, 42, 43, 48, 50, 53, 56, 60, 69, 70, 75, 77, 78, 79, 80, 92, 93, 96, 105, 107, 109, 114, 115, 119, 150, 163, 164, 168, 169, 172, 173, 184, 185, 193, 199, 211, 212, 214, 215, 216, 217, 218, 222, 223, 228, 232, 237, 238, 240, 249, 252, 254, 255, 258, 266, 267, 268, 274, 278, 284, 285, 286, 287, 290, 291, 292, 304, 309, 310, 312, 313, 315, 318, 325, 326, 327, 329, 330, 336
  sanitation compliance certificate, 48, 58, 80, 98, 103, 285

hut-to-hut system, x, xv, 50, 63, 72, 75, 81, 99, 176, 328, 330

## I

interior lakes, xi, vii, viii, xi, xi, xii, xiii, xv, 1, 18, 30, 39, 40, 42, 48, 53, 57, 58, 59, 66, 69, 70, 78, 79, 86, 93, 94, 104, 105, 107, 115, 117, 135, 137, 138, 140, 141, 143, 144, 149, 171, 212, 214, 216, 220, 224, 225, 237, 240, 241, 247, 252, 266, 269, 271, 281, 283, 285, 286, 288, 292, 295, 296, 297, 315, 317, 318, 328, 329, 330

interpretation, x, ii, vii, xi, x, xi, xiv, 6, 15, 19, 28, 37, 38, 44, 47, 51, 56, 60, 62, 63, 65, 67, 69, 72, 76, 79, 91, 95, 98, 99, 100, 102, 112, 118, 163, 177, 178, 180, 232, 242, 262, 268, 270, 271, 279, 292, 293, 297, 301, 307, 313, 323, 327, 332, 333, 334

## K

Kabetogama Lake, x, vi, vii, xi, xi, xii, xiv, xv, 17, 21, 78, 85, 104, 107, 109, 110, 117, 118, 129, 131, 136, 137, 138, 140, 141, 142, 143, 151, 156, 157, 161, 165, 166, 169, 175, 177, 180, 181, 184, 187, 191, 208, 212, 215, 217, 218, 225, 228, 230, 237, 238, 241, 243, 251, 259, 261, 274, 309, 317, 319, 321, 326, 330, 331, 337
  developed area, 29, 93, 95, 107, 314, 315, 316
  special use zone, 29, 43

Kabetogama Lake visitor center, xi, vii, xi, xi, xii, 21, 43, 44, 49, 60, 70, 79, 95, 113, 118, 164, 171, 181, 238, 261, 269, 299, 300, 310, 329, 332

Kabetogama Peninsula, i, vii, viii, xii, xiv, 1, 34, 45, 66, 85, 86, 98, 111, 116, 134, 141, 147, 148, 152, 167, 172, 173, 175, 176, 209, 231, 237, 239, 241, 261, 268, 270, 297, 298, 320, 327, 328, 329

Kabetogama Ranger Station Historic District, xiv, 41, 43, 47, 65, 68, 76, 85, 89, 90, 102, 157, 166, 181, 202, 276, 333

Kabetogama-Ash River road, xii, xiv, 60, 70, 79, 99, 104, 109, 116, 251, 254, 257, 262, 268, 272, 278, 282, 292, 297, 298, 308, 310, 312, 316, 320, 328, 337

Kettle Falls Historic District, 49, 66, 151, 159, 167, 208

Kettle Falls Hotel, 13, 16, 43, 46, 58, 78, 90, 117, 157, 158, 160, 161, 178, 183, 232, 241

## L

[illegible], xi, iii, x, xi, xii, xiv, 1, 7, 37, 38, 49, 61, 63, 64, 71, 72, 79, 80, 82, 97, 104, 105, 109, 110, 115

117, 119, 133, 148, 149, 171, 207, 208, 209, 210, 214, 223, 225, 226, 227, 238, 243, 246, 249, 250, 251, 254, 257, 258, 261, 268, 272, 283, 284, 287, 289, 291, 292, 294, 297, 309, 316, 319, 327, 329, 330

**land management areas**, 37, 43, 49, 51, 52, 60, 64, 65, 70, 73, 74, 79, 82, 83, 95, 101, 102, 238, 261, 270, 292, 304, 326, 333, 336

**backcountry use areas**, 31, 44, 50, 62, 72, 79, 83, 231, 239, 260, 271, 303, 328, 335

**developed areas**, 19, 30, 36, 37, 43, 49, 50, 51, 52, 60, 62, 64, 65, 70, 72, 73, 74, 79, 80, 82, 83, 95, 97, 101, 102, 109, 111, 166, 224, 234, 238, 239, 262, 269, 282, 290, 304, 309, 320, 335

**frontcountry areas**, x, xi, xii, 37, 38, 49, 60, 61, 64, 70, 79, 96, 117, 238, 261, 292, 296, 327, 330

**lynx**, x, xii, 111, 146, 151, 229, 230, 231, 260, 261, 292, 293, 320, 321

## M

**mainland**, x, vii, xii, xiv, 13, 34, 44, 53, 62, 66, 72, 81, 86, 99, 110, 151, 171, 173, 176, 184, 237, 269, 272, 321, 329

**maintenance**, vi, x, xii, 15, 21, 37, 52, 64, 65, 73, 74, 82, 83, 86, 91, 101, 102, 103, 104, 112, 113, 118, 159, 160, 166, 174, 189, 191, 229, 232, 234, 235, 244, 245, 251, 262, 264, 266, 272, 274, 275, 279, 282, 292, 301, 302, 322, 323, 332, 333, 334

**management areas**, x, 37, 38, 40, 41, 56, 68, 77, 91, 252, 253, 303, 307

**appropriate visitor use and facilities**, 37, 38, 39, 40

**modified proposed action**, x, ii, iii, viii, ix, xi, xiii, xiv, xv, 26, 35, 53, 56, 62, 65, 87, 88, 123, 189, 191, 195, 238, 249, 250, 251, 252, 253, 255, 256, 257, 259, 260, 262, 269, 272, 278

**Moose Bay**, xi, xii, 59, 60, 78, 96, 117, 158, 161, 242, 271, 279, 331

**motorized use**, x, vi, vii, xiii, xiv, xv, 1, 14, 16, 18, 25, 37, 39, 40, 45, 49, 53, 57, 59, 66, 69, 76, 79, 82, 85, 93, 94, 95, 104, 105, 107, 117, 144, 165, 168, 193, 206, 212, 214, 215, 216, 217, 220, 221, 222, 237, 238, 240, 241, 242, 249, 252, 260, 261, 268, 270, 271, 276, 278, 281, 283, 282, 286, 288, 289, 292, 296, 297, 304, 309, 313, 314, 316, 317, 320, 328, 330

**Mukooda Lake**, viii, xi, xii, xiii, 34, 43, 46, 49, 59, 60, 62, 69, 70, 73, 76, 79, 86, 93, 94, 98, 106, 107, 117, 178, 179, 210, 222, 242, 271, 283, 285, 299, 303, 331

**not suitable for wilderness**, 25

## N

**Namakan Dam**, viii, xi, xii, 42, 43, 102, 116, 161, 177, 180, 181, 246, 274, 272, 302, 333

**Namakan Lake**, 131, 134, 135, 136, 137, 142, 143, 156, 161, 164, 193, 220, 221

**natural resources**, x, vii, ix, xiv, 8, 16, 17, 18, 20, 22, 25, 27, 28, 38, 41, 45, 52, 53, 54, 62, 63, 65, 66, 73, 75, 83, 101, 103, 121, 124, 131, 141, 143, 149, 150, 152, 168, 171, 176, 183, 191, 193, 196, 199, 200, 201, 204, 219, 222, 249, 250, 261, 272, 281, 302, 306, 309, 334, 341, 342

**nonmotorized**, x, vi, vii, xi, 14, 16, 39, 40, 42, 45, 48, 49, 50, 53, 57, 59, 60, 62, 69, 70, 72, 75, 79, 80, 81, 82, 93, 94, 95, 98, 99, 116, 117, 163, 168, 173, 174, 175, 176, 212, 224, 232, 238, 239, 240, 241, 242, 251, 259, 260, 261, 268, 270, 271, 276, 278, 282, 288, 292, 296, 297, 298, 299, 304, 311, 320, 328, 329, 330

**nonmotorized use areas**, 70, 94

**no-wake boating**, 59, 70, 96, 105, 107, 108, 109, 110, 112, 117, 204, 285, 286, 289, 292, 291, 295, 299, 306, 307

## O

**operations and maintenance facilities**, viii, 32, 65, 74, 83, 102, 281

**overnight facilities**, xii, 35, 49, 60, 70, 79, 96, 164, 278, 290

**overnight use**, x, x, xi, xii, xiii, xiv, 13, 16, 30, 42, 43, 45, 48, 49, 57, 58, 62, 69, 71, 92, 96, 97, 98, 104, 105, 109, 110, 112, 114, 115, 116, 117, 118, 119, 169, 172, 173, 174, 192, 207, 237, 239, 240, 241, 242, 244, 245, 249, 249, 250, 251, 252, 253, 254, 257, 258, 259, 267, 268, 269, 270, 271, 274, 278, 279, 281, 282, 283, 284, 288, 291, 292, 292, 296, 297, 298, 299, 301, 305, 306, 309, 310, 318, 322, 325, 327, 328, 329, 330, 336

**permit system**, x, vii, viii, ix, x, xi, xii, 27, 48, 53, 56, 57, 62, 65, 69, 70, 76, 77, 92, 97, 105, 109, 114, 232, 254, 258, 265, 275, 292, 325, 337

## P

**park operations**, x, ii, ix, xi, xii, xiv, 10, 21, 26, 37, 47, 52, 56, 68, 77, 91, 101, 102, 118, 119, 189, 232, 234, 244, 245, 272, 274, 275, 278, 292, 301, 302, 325, 332, 333, 334

**parking**, 14, 17, 37, 49, 60, 69, 70, 79, 91, 95, 115, 129, 165, 166, 167, 217, 240, 255, 261, 270, 285, 290, 298, 305, 314, 426, 329, 330

**partnerships**, x, vi, vii, viii, xii, xiii, xiv, xv, 6, 10, 11, 21, 28, 35, 44, 45, 46, 48, 51, 52, 53, 55, 64, 65, 66, 67, 68, 73, 74, 81, 82, 83, 87, 89, 91, 100, 101, 102, 103, 104, 107, 112, 115, 117, 118, 180, 181, 217, 232, 234, 244, 245, 252, 263, 267, 270, 271, 272, 274, 275, 277, 278, 292, 292, 296, 301, 302, 303, 305, 306, 314, 322, 323, 332, 333, 334, 336, 340, 357

**primitive areas**, x, xiii, 14, 27, 40, 50, 51, 54, 63, 64, 66, 72, 75, 81, 87, 99, 100, 104, 105, 110, 117, 119, 168, 207, 209, 212, 214, 232, 240, 249, 250, 251, 252, 254, 262, 266, 269, 272, 281, 283, 284, 287, 292, 297, 298, 299, 305, 306, 312, 313, 316, 322, 328, 330, 335

## R

**Rainy Dam**, 42, 171, 180, 181

408

Rainy Lake, vi, vii, 14, 16, 21, 42, 43, 56, 79, 83, 86, 89, 95, 107, 108, 115, 127, 131, 134, 135, 136, 137, 139, 141, 142, 143, 149, 151, 156, 157, 161, 162, 164, 165, 166, 167, 168, 169, 175, 176, 177, 180, 181, 184, 185, 186, 187, 191, 192, 193, 209, 213, 216, 217, 218, 219, 221, 223, 229, 238, 250, 267, 290, 313, 342

Rainy Lake visitor center, vi, vii, 16, 43, 44, 49, 60, 70, 79, 96, 127, 162, 165, 166, 175, 176, 177, 181, 192, 238, 250, 267, 269

[illegible] Bay, 59, 69, 78, 96, 271

recreational sites, xv, 1, 7, 91, 129, 168, 169, 174, 175, 176, 212, 213, 220, 224, 227, 229, 233, 251, 252, 256, 258, 259, 260, 283, 285, 286, 287, 289, 295, 312, 314, 315, 316, 319, 323, 326

reservations, xi, 69, 71, 77, 92, 104, 156, 164, 174, 250, 251, 252

resource monitoring, xiv, 48, 57, 69, 78, 92, 323

# S

safety, x, xi, xii, xiv, xv, 14, 17, 21, 28, 36, 39, 40, 47, 50, 51, 52, 62, 63, 64, 65, 71, 72, 73, 76, 80, 81, 82, 83, 85, 87, 99, 100, 101, 102, 117, 168, 175, 178, 180, 181, 196, 197, 199, 203, 211, 232, 238, 242, 244, 245, 247, 251, 262, 271, 272, 273, 290, 299, 300, 301, 302, 331, 332, 334

Sand Point Lake, 131, 136, 137, 143, 144, 191, 212, 318

Shoepack Lake, 42, 48, 58, 62, 78, 93, 98, 117, 141, 171, 186, 216, 237, 241

not suitable for wilderness, 25

skiing, x, 37, 38, 39, 40, 111, 168, 170, 229, 231, 260, 268

snowmobile portage, 59, 69, 78, 96, 231

snowmobile trails and portages, 42, 49, 59, 69, 78, 96

snowmobile trails, x, x, xi, xii, 1, 14, 17, 18, 21, 24, 25, 31, 35, 37, 39, 42, 48, 49, 57, 59, 62, 69, 72, 78, 81, 82, 85, 86, 93, 94, 99, 100, 107, 110, 111, 117, 120, 138, 144, 150, 152, 162, 163, 164, 165, 167, 168, 174, 175, 176, 184, 191, 192, 204, 205, 206, 215, 217, 218, 220, 228, 229, 231, 232, 241, 242, 246, 247, 259, 261, 270, 271, 282, 299, 300, 307, 314, 320, 331

[illegible], xi, 43, 49, 59, 115, 238, 240, 295

soils, x, xi, xiv, 16, 26, 104, 128, 129, 132, 134, 135, 136, 138, 145, 186, 187, 192, 199, 207, 208, 209, 211, 212, 216, 247, 249, 250, 251, 252, 253, 257, 279, 281, 282, 285, 307, 309, 310, 311

special regulations, 25

special use zone, vi, xiv, 39, 43, 49, 59, 69, 78, 96

permits, 49, 96

species of special concern, xi, 27, 28, 29, 30, 131, 145, 150, 151, 152, 153, 193, 201, 224, 227, 259, 309, 319

*See also* threatened or endangered species

sportfishing, xv, 7, 52, 65, 73, 108, 162, 177, 202, 219, 250, 280, 315

staffing, x, vi, xii, xiv, 19, 21, 22, 28, 45, 46, 50, 51, 52, 63, 64, 65, 72, 73, 74, 80, 81, 82, 83, 85, 87, 88, 99, 100, 101, 105, 113, 118, 119, 160, 177, 180, 231, 232, 235, 240, 254, 255, 262, 272, 273, 277, 282, 291, 301, 302, 314, 322, 332, 333

# T

tent camping

group permits, 57

threatened or endangered species, 45, 54, 56, 67, 75, 87, 150, 201

trails, i, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv, 1, 13, 14, 16, 17, 18, 23, 26, 37, 38, 39, 42, 44, 45, 47, 49, 50, 52, 53, 56, 59, 60, 62, 63, 64, 65, 66, 69, 70, 72, 74, 75, 78, 79, 80, 81, 83, 85, 86, 87, 94, 95, 96, 98, 99, 101, 104, 105, 109, 111, 112, 116, 117, 118, 123, 150, 152, 162, 165, 166, 167, 168, 172, 173, 174, 175, 176, 178, 181, 184, 204, 207, 208, 209, 210, 211, 212, 214, 217, 223, 224, 226, 228, 229, 230, 231, 237, 239, 241, 244, 246, 247, 249, 250, 251, 252, 253, 254, 257, 258, 259, 260, 261, 266, 267, 268, 269, 270, 271, 274, 276, 277, 278, 281, 282, 283, 284, 285, 287, 289, 290, 291, 295, 297, 298, 299, 300, 305, 309, 310, 311, 312, 313, 316, 318, 320, 321, 326, 328, 329, 330, 331, 335, 337

# U

undeveloped areas, vi, vii, viii, x, xi, xiii, xv, 13, 16, 17, 18, 23, 43, 50, 61, 62, 66, 71, 80, 86, 97, 98, 104, 105, 107, 109, 112, 115, 117, 138, 164, 172, 173, 192, 207, 208, 209, 211, 215, 218, 223, 233, 239, 240, 241, 242, 250, 251, 252, 253, 254, 257, 259, 262, 268, 270, 271, 273, 279, 281, 282, 283, 284, 287, 288, 290, 297, 299, 309, 310, 311, 313, 315, 318, 319, 322, 327, 328, 329, 330

# V

vegetation, x, xi, xiii, xiv, 16, 17, 18, 27, 28, 30, 46, 47, 54, 55, 56, 62, 66, 68, 75, 76, 87, 90, 97, 104, 105, 109, 127, 129, 130, 131, 133, 134, 135, 143, 145, 146, 147, 148, 150, 153, 154, 158, 159, 191, 192, 199, 200, 201, 207, 209, 210, 211, 212, 213, 214, 223, 224, 228, 232, 233, 234, 243, 246, 247, 249, 250, 251, 252, 253, 254, 256, 257, 258, 260, 278, 279, 282, 283, 284, 285, 286, 287, 288, 289, 306, 307, 310, 311, 312, 313, 316, 320, 337

visitor centers, x, vii, viii, ix, xi, xiii, xiv, xv, 13, 14, 15, 35, 37, 44, 49, 52, 53, 60, 64, 65, 66, 70, 74, 75, 79, 83, 95, 101, 103, 104, 105, 109, 113, 118, 129, 165, 166, 174, 177, 180, 181, 208, 209, 212, 214, 238, 243, 246, 247, 250, 251, 253, 254, 257, 267, 269, 272, 273, 276, 282, 283, 284, 290, 298, 300, 301, 302, 311, 312, 313, 316, 318, 320, 329, 331, 332, 333, 339

visitor destinations, x, vii, viii, xi, xiii, xiv, 9, 15, 16, 27, 38, 42, 48, 50, 55, 61, 62, 63, 71, 77, 80, 90, 91, 98, 109, 112, 116, 118, 234, 244, 258, 261, 264, 267, 268, 270, 272, 278, 281, 287, 291, 292, 297, 298, 306, 309, 316, 322, 327, 329, 334

visitor experience, x, ii, vii, viii, xi, xi, xiii, xiv, 5, 10, 13, 14, 27, 30, 31, 35, 37, 38, 39, 40, 50, 54, 57, 60, 64,

[illegible]

visitor services, [illegible]

Visitor Use and Facilities Plan (VUFP), [illegible] 23, 26, 28, 30, 35, 162, 339, 340

volunteers, [illegible] 274, 333

## W

water management areas

motorized use area, [illegible]

nonmotorized use area, [illegible]

no-wake water area, [illegible]

water quality, [illegible]

water resources, [illegible]

wetlands, [illegible]

wilderness, [illegible]

area recommended for wilderness, 24

potential wilderness additions, 24

wilderness qualities, 24

wilderness suitability, 24

wildlife, [illegible]

[illegible]

# *Visitor Use and Facilities Plan*

BEST COPY AVAILABLE

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SECTION A [illegible]
A.1. [illegible]
A.1.1. [illegible]
A.1.2. [illegible]
A.1.3. [illegible]
A.2. [illegible]
A.2.1. [illegible]
A.3. [illegible]
A.4. [illegible]
A.4.1. [illegible]
A.4.2. [illegible]
A.5. [illegible]

SECTION B [illegible]
B.1. [illegible]
B.2. [illegible]

SECTION C [illegible]
C.1. [illegible]
C.2. [illegible]
C.3. [illegible]

SECTION D [illegible]
D.1. [illegible]
D.1.1. [illegible]
D.1.2. [illegible]
D.1.3. [illegible]
D.1.4. [illegible]
D.1.5. [illegible]
D.1.6. [illegible]
D.1.7. [illegible]

SECTION E [illegible]
E.1. [illegible]
E.1.1. [illegible]
E.1.2. [illegible]
E.1.3. [illegible]
E.1.4. [illegible]

SECTION F — II-17
F.1. What is Next for the Path? Modified Proposed Actions and Suggestions — II-17
F.1.1. Visitor Use and Densities on the Path — Modified Proposed Actions — II-17
F.1.1.1. Mission Goals — II-17
F.1.1.2. Proposed Actions — II-18
F.1.2. Methods of Achieving an Appropriate Level and Type of Visitation — Modified Proposed Actions — II-26
F.1.2.1. Mission Goals — II-26
F.1.2.2. Modified Proposed Actions — II-26
F.1.2.3. Maintaining Visitor Experience and Resource Protection to Achieve an Appropriate Level and Type of Visitation — II-27
F.1.3. Informational and Educational Messages and Materials — Modified Proposed Actions — II-30
F.1.3.1. Mission Goals — II-30
F.1.3.2. Proposed Actions — II-30
F.2. What is Next for the Gateway Communities? Actions and Suggestions — II-32
F.2.1. Visitor Use and Densities outside the Path — II-32
F.2.1.1. Goals — II-32
F.2.1.2. Suggested Actions — II-32
F.2.2. Methods of Achieving an Appropriate Level and Type of Visitation — II-34
F.2.2.1. Goals — II-34
F.2.2.2. Suggested Actions — II-34
F.2.3. Informational & Educational Materials and Messages — Gateway Communities — II-35
F.2.3.1. Goals — II-35
F.2.3.2. Suggested Actions for All Gateway Communities — II-35
F.2.4. Other Comments — II-35

SECTION G — II-36
G.1. Tourism and Marketing — II-36
G.1.1. Tourism and Marketing Activities in Which Voyageurs National Park Currently Participates — II-36
G.1.1.1. Mission Goals — II-36
G.1.1.2. Current Actions — II-36
G.1.2. Tourism and Marketing Activities in Which Gateway Communities Currently Participate — II-36
G.1.2.1. Current Actions — II-37
G.1.2.2. Minnesota Office of Tourism (MOT) Activities — II-37
G.1.2.3. University of Minnesota Extension Service – Tourism Center — II-37
G.1.3. What is Next for Tourism and Marketing? — II-38
G.1.3.1. Goals — II-38
G.1.3.2. Suggested Actions for All Gateway Community Tourism Bureaus — II-38
G.1.3.3. International Falls Convention & Visitors Bureau Action Plan (February 1999) — II-38
G.1.3.4. Ely's Voyageurs Country Initiative [illegible] (March 1999) — II-39
G.1.3.5. Kabetogama Tourism Bureau – Long Range Strategic Plan (November 1998) — II-39
G.1.3.6. Recommended Actions from Tourism Marketing/Tourism Plans for All Gateway Communities — II-40

SECTION H ... II-42
H.8. Partnerships ... II-42
  H.8.1. Mission Goals ... II-42
  H.8.2. Existing Partnerships ... II-42
  H.8.3. Proposed Partnerships ... II-42
  H.8.4. Proposed Actions ... II-43

SECTION I ... II-44
I.1. Appendices ... II-44
  I.1.1. Goals Statement ... II-44
  I.1.2. Project Timeline for the General Management Plan and Visitor Use and Facilities Plan ... II-46
  I.1.3. Visitor Use & Facilities Plan Consultation Group Member List ... II-47
  I.1.4. Meeting Schedule of Visitor Use and Facilities Plan Ad Hoc Consultation Group ... II-50
  I.1.5. Summary of Scoping Questionnaire Responses ... II-52
  I.1.6. Summary of Visitor Use and Facilities Plan Meeting Notes ... II-57
  I.1.7. Accomplishments of Tourism and Marketing Initiatives ... II-66
  I.1.8. Voyageurs National Park's Existing Partnerships ... II-73
  I.1.9. Area Attractions — Suggested List ... II-74
  I.1.10. References and Consultants ... II-75

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# A.1.1 INTRODUCTION

## A.1.1.1 VISITOR USE AND FACILITIES PLAN LEGISLATION

In 1982, Congress debated legislation for a boundary change to Voyageurs National Park. During this process an amendment calling for the National Park Service to complete a tourism plan was proposed. Although the legislative history and other documents occasionally referred to a tourism plan, the legislation passed by Congress on January 3, 1983, included an amendment for a Visitor Use and Facilities Plan (VUFP). The legislation states:

> The Secretary shall, in cooperation with other Federal, State, and local governmental agencies and private entities experienced in the fields of outdoor recreation and visitor services, develop and implement a comprehensive plan for visitor use and overnight visitor facilities for the park. The plan shall set forth the methods of achieving an appropriate level and type of visitation in order that the resources of the park and its waters may be protected for, and used and enjoyed by, the public in a manner consistent with the purposes for which the park was established. Such plan may include appropriate architectural and educational strategies and materials. In the development and implementation of such plan the Secretary may expend funds donated or appropriated for the purposes of this subsection. Effective October 1, 1983, there is authorized to be appropriated for the purposes of this subsection not to exceed $250,000, to remain available until expended.

## A.1.1.2 WHY IS THE VISITOR USE AND FACILITIES PLAN BEING COMPLETED IN CONJUNCTION WITH THE GENERAL MANAGEMENT PLAN?

In February 1996, the National Park Service allocated funds for Voyageurs National Park to develop a general management plan (GMP). Because general management plans always address issues of visitor use and facilities, and the completion of the VUFP was very important to the communities surrounding the park, and funding had not been made available for the VUFP, the National Park Service chose to complete the visitor use and facilities plan in conjunction with the GMP.

Another reason why the National Park Service chose to complete the plans together resulted from the Federal Mediation process that took place in 1996 and 1997. The Federal Mediation and Conciliation Service, at the request of U.S. Senator Paul Wellstone, convened a mediation panel to "identify and resolve long-standing disputes involving the administration and utilization of Voyageurs National Park." Although the mediation panel did not reach consensus on many issues, it did agree on how the VUFP should be addressed.

Consensus Decision 6 states: "The committee recommends that issues surrounding proposals for a Visitor Use and Facilities Study are most appropriately handled through the Park Service's General Management Plan (GMP) planning process. The committee recommends that the GMP planning process should solicit input of other federal, state and local governmental entities, as well as from the public."

## A.1.3.3 VISITOR USE AND FACILITIES PLAN AD HOC CONSULTATION GROUP

When the National Park Service (NPS) chose to include the Visitor Use and Facilities Plan as part of the general management plan process, it formed an ad hoc consultation group. According to the legislation, the Secretary will work "in cooperation with other Federal, State, and local governmental entities and private entities experienced in the fields of outdoor recreation and visitor services" to complete the plan. The Superintendent of Voyageurs National Park invited [illegible] governmental and private entities to participate in the consultation group. These people were to provide participants broad [illegible] knowledge and experience in outdoor recreation and visitor services. [illegible] individuals or representatives of organizations agreed to be part of the ad hoc consultation group. A member list is provided in Appendix A.1.3.3.

The role of the consultation group is to review, discuss, and comment on general management plan and visitor use and facilities plan (GMP/VUFP) issues and documents. Voyageurs National Park has also looked to this group for their views on potential partnerships or means of developing visitor use and facilities outside the park that support park visitors. The park wants to continue to work with these [illegible] communities to provide better services and quality visitor experiences.

The Ad Hoc Consultation Group is not an advisory council or a decision-making body. During the meetings, there was an effort to reach consensus [illegible] planning topics were discussed in detail and suggested actions for the NPS to consider were noted. Most discussions resulted in a wide range of opinions being voiced. Throughout the GMP/VUFP process, group members received copies of the documents distributed to the general public.

The consultation group meeting schedule and summaries are in Appendix A.1.4. Most of the meetings focused on the topic areas presented in the draft general management alternatives published in May 1999. The planning team used comments from the Consultation Group, the public, and other governmental entities to develop the Visitor Use and Facilities Plan as well as the alternatives and the proposed action found in the GMP portion of this entire document.

The general management plan and visitor use and facilities plan are now in their final stage. Voyageurs National Park views the plans as dynamic documents that should continue to be re-evaluated and adjusted for progress. Some of the components of the proposed action call for feasibility studies. The Ad Hoc Consultation Group along with the general public will continue to be a source of ideas and contributions for the park as these feasibility studies are completed. The [illegible] to [illegible] continue to use as a basis for assessing its progress.

4/88

# A.2 BACKGROUND

## A.2.1 PILOT PROJECT ON TOURISM

In 1990, Priscilla Baker, Special Assistant to the Director of the National Park Service, conducted a pilot project on tourism at Voyageurs National Park. Then Superintendent Russ Berry requested Ms. Baker's assistance because many people in the communities surrounding the park felt that the park had not lived up to promises of increased visitation and economic benefits for the area from tourism.

Ms. Baker organized a working group of representatives from major travel and recreation industries that had potential interests in an area like Voyageurs. For example, National Marine Manufacturers Association, [illegible], Yellowstone Tour and Travel, Recreation Vehicle Industry Association, and American Youth Hostels, Inc., were invited to participate. Ten representatives participated in the project and met with area tourism businesses.

For one week, the tourism working group, Ms. Baker, park staff, and local tourism owners worked together to gather the following information: what visitors want out of the park, what visitors could do in the park, what businesses could do to support tourism, and what businesses could do. After the trip to Voyageurs, each member of the working group sent recommendations to Ms. Baker who compiled them into one report.

As Ms. Baker finalized the report for the pilot project, Congress was debating legislation for a boundary change at Voyageurs National Park. The comments and criticisms generated by the tourism working group encouraged area citizens to organize and achieve an amendment to the legislation for a federal tourism plan. As a result of the introduction, Congress passed legislation on January 3, 1993 that directed the National Park Service to complete a visitor use and facilities plan for Voyageurs National Park.

# A.3 WHAT GUIDES PARK PLANNING?

Starting in May 1998, the Director of the National Park Service approved new policies and guidelines for park planning. The National Park Service has placed increased emphasis on the coordination and integration of all types of park planning. Instead of disjointed processes, the National Park Service has established a unified framework for planning and decision making.

A general management plan (GMP) is the highest and broadest level of planning. A park's general management plan provides overall direction for future park management as well as a framework for making decisions. The lifespan for a general management plan is 15 to 20 years.

The next level of planning is a park's strategic plan. Strategic plans span a five-year period and comply with the Government Performance and Results Act of 1993.

Implementation planning focuses on how an activity or project will be done. These plans often require a level of detail that goes well beyond that of a general management plan or strategic plan.

Lastly, annual performance plans establish goals for the upcoming fiscal year. All together these different levels of planning guide the management of each unit of the National Park System.

The Visitor Use and Facilities Plan (VUFP) [illegible] the GMP and [illegible] Plans. The VUFP is [illegible] Voyageurs National Park and therefore is not a [illegible] component of National Park Service planning [illegible]. Parts of the VUFP [illegible] the GMP [illegible] management [illegible] the park [illegible]. Other parts of the VUFP [illegible] the park, or [illegible].

## A.4 RELATIONSHIP TO OTHER PLANS

### A.4.1 GENERAL MANAGEMENT PLAN

A general management plan is a document that provides overall direction for future park management. It thus provides a framework for the park to use when making decisions about such things as park resources, visitor use, and facilities. The foundation of a general management plan is formed by three components: the park's mission, purpose, and significance, which are based on the legislation under which it was established; the large body of laws that govern the National Park System; and any special commitments or mandates.

Throughout the planning process, the planning team has incorporated comments from the Commission, Group and the public into the proposed management alternatives and the draft proposed action of the General Management Plan as well as all parts of the Visitor Use and Facilities Plan. These two documents, in combination as one plan, will guide the management of Voyageurs National Park over the next 20 years.

### A.4.2 OTHER PLANS

For additional information on the relationship between the GMP, VUFP, and Voyageurs' other plans, please see the section titled "Relationship to Other Plans and Projects" in the GMP's Chapter 1: Purpose of and Need for the Plan.

## A.5 PLAN ORGANIZATION

The Visitor Use and Facilities Plan (VUFP) is organized by the topics outlined in the 1995 VUFP legislation and legislative history. Since the VUFP legislation directs the NPS to set forth standards in order that the resources of [illegible] may be [illegible], and used and enjoyed by the public in a manner consistent with the purposes for which the park was established, the plan addresses each topic as it relates to [illegible] the park and [illegible] the public.

Section A provides introductory and background information to familiarize the reader with the history of the Visitor Use and Facilities Plan as well as the planning process. Section B presents the elements that are the basis for this plan: the National Park Service mission and guiding principles and Voyageurs National Park's mission, purpose, and significance statements.

Sections C, D and E address the status or conditions of the topics identified in the legislation: visitor use and facilities, analysis of achieving an appropriate level and type of [illegible], including such things as [illegible], [illegible] conditions, and [illegible] and

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[illegible]

420

[illegible]

[illegible]

[illegible]

[illegible]

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# [illegible] & GUIDING PRINCIPLES

[illegible] from the National Park Service's Strategic Plan for Fiscal Year 2000 to [illegible] Strategic Plan can be viewed on the Internet at www.nps.gov/planning.

## [illegible]

The National Park Service preserves unimpaired the natural and cultural resources and values of the national park system for the enjoyment, education, and inspiration of this and future generations. The Park Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

## GUIDING PRINCIPLES

To achieve this mission, the National Park Service adheres to the following guiding principles:
***Excellent Service:*** Providing the best possible service to park visitors and partners.

***Productive Partnerships:*** Collaborating with federal, state, tribal, and local governments, private organizations, and businesses to work toward common goals.

***Citizen Involvement:*** Providing opportunities for citizens to participate in the decisions and actions of the National Park Service.

***Heritage Education:*** Educating park visitors and the general public about their history and common heritage.

***Outstanding Employees:*** Empowering a diverse workforce committed to excellence, integrity, and quality work.

***Employee Development:*** Providing developmental opportunities and training so employees have the "tools to do the job" safely and efficiently.

***Wise Decisions:*** Integrating social, economic, environmental, and ethical considerations into the decision-making process.

***Effective Management:*** Instilling a performance management philosophy that fosters creativity, focuses on results, and requires accountability at all levels.

***[illegible]:*** [illegible] science as a means to improve park management. Promoting parks [illegible] scientific research and inquiry to preserve resources without impairing other park values.

***Shared Capabilities:*** Sharing technical information and expertise with public and private land managers.

422

# MISSION, PURPOSE, AND SIGNIFICANCE

At the beginning of a planning process it is important to [illegible] mission, purpose, and significance statements. These statements provide the [illegible] park should be managed and used. They provide the standard and authority against which proposed decisions and actions are measured.

## MISSION STATEMENT

Voyageurs National Park preserves the landscapes and scenic waterways that shaped the routes of the North American fur traders and defined the border between the United States and Canada. The park and its diverse resources provide outstanding opportunities for outdoor recreation, scientific study, sportfishing, education, and appreciation of the northwoods lake country setting.

## PURPOSE STATEMENTS

The purposes of Voyageurs National Park are to:

- preserve the scenery, geologic conditions, and interconnected waterways in northern Minnesota for the inspiration and enjoyment of people now and in the future.
- commemorate the voyageurs' routes and fur trade with the Native peoples of the north, which contributed significantly to the opening of northern North America to European settlement.
- preserve, in an unimpaired condition, the ecological processes, biological and cultural diversity, and history of the northwoods lake country border we share with Canada.
- provide opportunities for people to experience, understand, and treasure the lake-country landscape — its clean air and water, forests, islands, wetlands, and wildlife — in a manner that is compatible with the preservation of park values and resources.

## SIGNIFICANCE STATEMENTS

- The waterways of Voyageurs National Park include one of the most important segments of the fur trade route used in the opening of northwestern North America.
- Located near the headwaters of the Arctic watershed of Hudson Bay, the park's lakes — rather than land — have been the primary travel route throughout history. The lakes continue to shape transportation and recreational uses of the area today.
- The park's exposed rocks and landscape exemplify the glacial activity of the Pleistocene epoch and some of the most complete and extensive Precambrian geologic features in the United States.
- The park preserves the timeless beauty of woods, rocks, water, and sky that invite people to renew themselves through a variety of outdoor activities.
- The designation of Voyageurs as a national park is integral to the protection of the boundary waters ecosystem by both the United States and Canada. Along with Quetico Provincial Park and the Boundary Waters Canoe Area Wilderness, Voyageurs was and remains at the heart of a major conservation effort to protect the boreal forest landscape, its interconnected waterways, and associated wildlife.
- Voyageurs National Park holds vital evidence of the continuity of 10,000 years of human relationships with the environment uniquely dictated by the interconnected waterway system. The park provides an exceptional, largely unstudied storehouse of knowledge for the future and preserves resources associated with a long period of use, including those representing the fur trade, Native Americans, logging, and recreation.

[illegible] support facilities. Each [illegible]. The following is a summary of [illegible] the park.

[illegible]

- [illegible] campsites, 13 large campsites, 2 [illegible] all accessible by [illegible]

[illegible]

**Winter Visitor Use and Facilities**

- snowmobiling
  - 110 miles of groomed trails
  - [illegible] trails
- snowshoeing — 4 miles of marked trails
- cross-country skiing
  - about 20 miles of groomed trails
  - ungroomed lake surfaces and land
- ice road — 7 miles
- ice fishing
- winter camping
- ski planes
- guide services – ice fishing shelters, fishing

**Naturalist Programs for visitors**

- environmental education (school) program
- naturalist-led interpretive programs
- heritage tourism
  - Ellsworth Rock Gardens, Kettle Falls, Meadwood Lodge (Ash River Visitor Center), and Little American Island

**[illegible] Use**

- scientific research
- photography

**Visitor Facilities in the Park**

- Visitor Centers – Rainy Lake, Kabetogama Lake, and Ash River
- Ranger Station – Crane Lake
- handicapped accessible sites and facilities
  - [illegible] accessible campsite on [illegible], visitor centers, tour boats, [illegible] of trails
- 28 visitor docks (throughout the park)
- parking lots – Rainy Lake (40 vehicle/trailer, 20 car), Kabetogama Lake (25 vehicle/trailer, 4 car), and Ash River (30 vehicle/trailer, 16 car); each lot has handicapped parking

[illegible]

[illegible] by the gateway communities. [illegible]

**Summer Visitor Use and Facilities**

- motorboating (different sized boats)
  - 12 boat launches on the edge of the park
  - 10 marine repair and towing services
- houseboating
  - 92 rental houseboats
- paddling (canoe and kayak)
  - 2 outfitters & guides
- hiking
  - Tilson Bay trail, Ash River trails, Vermilion Falls, Vermilion Gorge, [illegible] Lake, [illegible] Bay Walk
- water skiing
- floatplanes
  - 2 air charters
- fishing
  - 38 fishing guides
- camping
  - 300 campsites, all accessible by [illegible]
  - 3 new county campsites in Black Bay, accessible by water
  - 11 camping guides
- swimming
- jet skiing
- sailing & windsurfing
- berry picking
- bird watching & watchable wildlife
- bicycling - Highway 11 bike trail
- golfing
- day use - Rainy boat launch area, Smokey Bear Park, Vermilion Falls Picnic Area (will be handicapped accessible in 2001)
- boat watching

**Winter Visitor Use and Facilities**

- snowshoeing
- cross-country skiing
  - Tilson Creek & Ash River Trail systems
- snowmobiling
- ice fishing & ice fishing shelter rentals
  - 16 winter guides
- winter camping
- skiplanes

**Lodging and Visitor Services**

- lodging
  - 78 businesses; 944 cabins and rooms
- outfitting (equipment rental and guides) - 8 outfitters
- VoyagOur Shuttle Service and Tours

**Other seasonal or year-round activities**

- photography
- heritage tourism
- accessible uses and facilities
- fall color tours
- off-road vehicle use
- hunting and trapping
- horseback riding
- remote border crossing station at [illegible] Landing - video system

**Attractions near Gateway Communities and beyond**

Please see appendix 1.1.9 for this listing.

[illegible]

| [illegible] | [illegible] | [illegible] | [illegible] Lake | [illegible] International Falls, & [illegible] |
|---|---|---|---|---|
| [illegible] | [illegible] instances<br>[illegible]<br>[illegible]<br>87<br>[illegible] | [illegible] instances<br>[illegible]<br>[illegible]<br>27<br>[illegible] | [illegible] instances<br>[illegible]<br>[illegible]<br>[illegible]<br>0 | [illegible] instances<br>[illegible]<br>[illegible]<br>118<br>[illegible] |
| [illegible] | 1 | 2 | 4 | 1 |
| [illegible] | 1 | 10 | 14 | 7 |
| [illegible] | 1 | 4 | [illegible] | 2 |
| [illegible] | 1 | 4 | 4 | 2 |
| [illegible] | 1 | 3 | 0 | 5 |
| [illegible] | 0 | 1 | 0 | 1 |
| [illegible] | 1 | 3 | 0 | 1 |
| [illegible] | 0 | 2 | 1 | 8 |
| | | | | |
| [illegible] | | | | |

| [illegible] | [illegible] | Fort Frances, Canada |
|---|---|---|
| [illegible] | 2<br>4 | 8<br>2 |
| [illegible] | [illegible] | 0 |
| [illegible] | [illegible] | 1 |
| [illegible] | [illegible] | 1 |
| [illegible] | [illegible] | 7 |
| [illegible] | [illegible] | 12 |

[illegible] was created in 2000.

436

[illegible]

## D.1 C[illegible] ACHIEVING AN [illegible] AND TYPE OF VISITATION

### D.1.1. INTRODUCTION

In order to respond to the Visitor Use and Facilities Plan legislative intent concerning visitation, the Consultation Group sought background information on National Park Service methods for counting visitors. The following information explains how visitors are counted and how visitor experience is currently monitored. This information is a starting point for establishing methods of achieving an appropriate level and type of visitation as discussed in Section F.

### D.1.2. HOW DOES THE NATIONAL PARK SERVICE COUNT VISITORS?

The National Park Service defines a visit as "the entry of any person, except NPS personnel, onto lands or waters administered by the NPS." Entry is the key word. If an individual or a group of persons enter the park and stay in the park overnight for one or more days, they are only counted once. If the same people enter the park and return to a resort outside the park at night for one or more days, they are counted each day because they enter the park each day.

Visits are further divided into recreation visits and nonrecreation visits. Recreation visits count the entry of persons onto lands or waters administered by the NPS for recreational purposes. This does not include government personnel, through traffic (commuters), trades-people, and persons residing within park boundaries.

Nonrecreation visits include through traffic, persons going to and from in-holdings or use and occupancy cabins, trades-people with business in the park, and government personnel (other than NPS employees) with business in the park.

These definitions are used throughout the National Park Service. The Public Use Statistical Office has developed a formula for calculating visitation that is unique for each individual unit of the National Park System. Each unit, like Voyageurs National Park, inputs data to the statistical office and that office does the calculations using a park specific formula. The park does not do the actual visitation calculations. The reason for this is to ensure that visitation is calculated consistently so it can be accurately compared across the system.

### D.1.3. HOW ARE VISITORS COUNTED AT VOYAGEURS NATIONAL PARK?

Counting visitors at Voyageurs National Park is difficult because of the multiple entry points and types of uses. Currently, the National Park Service uses a mathematical formula developed in 1982 to calculate annual visitation.

When the National Park Service developed the formula, NPS staff at the Public Use Statistics Office used initial counts and survey information collected over a 12-month period. Using the data collected, [illegible] 1992 and because of [illegible] park staff, the [illegible] including the current formula used at Voyageurs. Some of the [illegible] improvements to the entrance road and facilities at Ash River [illegible], and day use sites; additional trails; changes in fishing [illegible] and Canada; and an increased number of large groups. Changes have [illegible], such as lodging tax collection.

[illegible] will examine new sources of data and determine if they are reliable [illegible] of park visitation. They operate on the premise that data are not [illegible]. In the meantime, Voyageurs National Park will continue to use the formula developed in 1992 to calculate annual visitation.

## [illegible] ANNUAL PARK VISITATION

These figures equal the total number of visits to the park.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1984 | [illegible] | 1989 | 231,740 | 1994 | 240,088 | 1999 | 246,749 |
| 1985 | 211,8[illegible] | 1990 | 243,822 | 1995 | 226,104 | 2000 | 239,703 |
| 1986 | [illegible] | 1991 | 252,847 | 1996 | 260,226 | | |
| 1987 | 2[illegible]4,494 | 1992 | 244,505 | 1997 | 236,563 | | |
| 1988 | [illegible] | 1993 | 245,248 | 1998 | 240,060 | | |

## [illegible] WHAT DOES THE PARK PILOT COUNT DURING OVERFLIGHTS?

In cooperation with the Minnesota Department of Natural Resources (MNDNR), the park pilot performs the aerial portion of the fishing creel survey conducted during some years on the park's [illegible]. There are four different creel survey routes flown by the pilot. The MNDNR randomly [illegible] a computerized flight schedule for the pilot. The pilot may conduct creel surveys three [illegible] during the summer (May to October). During these surveys the pilot counts the number of [illegible], private boats (except houseboats) underway, houseboats (in park waters), [illegible], other boats (sailboats, kayaks, canoes), and occupied main lakes camping sites.

The pilot does not fly over the park counting visitors for inclusion in the annual visitation figures. (As [illegible], the visitor count at the Rainy Lake Visitor Center is used to calculate annual visitation.) [illegible] the information gathered during the aerial surveys is the main source of data used to [illegible] fishing pressure on the park's lakes. The aerial survey data are groundtruthed with surveys at [illegible] the actual number of fish caught and the number of people in boats.

In addition to the DNR creel surveys, the pilot also conducts flights for wildlife research, ranger [illegible], emergency response, fire monitoring or surveillance, ice conditions, and many other [illegible].

438

[illegible]

The [illegible] that [illegible] few again, etc. [illegible] the appendix or call the park.

On a regular basis, Voyageurs National Park asks visitors to fill out comment cards about their visit and experience.

### D.1.2. HOW MANY VISITORS CAN GATEWAY COMMUNITIES ACCOMMODATE?

The VUFP Consultation Group pointed out that discussions about achieving an appropriate level and type of visitation in the park must go hand in hand with discussions about visitation outside the park. Specifically, the question was raised about the ability of the infrastructure (number of resorts, parking, etc) outside the park to support any increased visitation. One must keep in mind that the facilities and infrastructure outside the park directly relate to the number of park visitors who can be accommodated.

Most gateway communities are limited by the space available to expand facilities to include such amenities as recreational vehicle camping, land based camping, or additional parking. Space and landscape features also limit their ability to improve existing facilities.

Gateway communities need to examine their individual resources and determine their goals and needs for visitation. For example, the VUFP Consultation Group identified the shoulder seasons or times of low visitation and different types of users (paddlers, bird watchers, etc.) as areas where tourism bureaus may focus their efforts to increase visitation.

# [illegible]

# [illegible]CATIONAL MATERIALS

## [illegible] [illegible] AND EDUCATIONAL MATERIALS NOW AVAILABLE FROM [illegible] NATIONAL PARK

- Voyageurs National Park – Official map [illegible]
- Camping, Houseboating, and Day Use [illegible]
- The [illegible] Voyageur (annual publication on park events, list of [illegible] & services available in gateway communities, etc.)
- [illegible] – historic places
- [illegible] single panel pamphlet
- [illegible] figures
- [illegible] and their locations
- [illegible] brochure
- Trail Guides
- Ellsworth Rock Garden Guide
- Voyageurs National Park Educator's Guide
- Fact Sheets: Wild Rice, BOR – boats on interior lakes, Hiking Trails, Climate, Fur Posts, and Canoeing/Kayaking
- Information on other national parks and the National Park Service
- Voyageurs National Park Web Site (www.nps.gov/voya)
- Kettle Falls Hotel, the official NPS concessionaire (www.kettlefallshotel.com)
- information bulletin boards at entry points and along snowmobile trails

## [illegible] INFORMATIONAL AND EDUCATIONAL MATERIALS NOW AVAILABLE FROM GATEWAY COMMUNITIES

A number of businesses and information centers in the gateway communities offer informational and educational materials about area attractions and natural features. Visitor information can be requested from the Ash River Commercial Club, Kabetogama Lake Tourism Bureau, Crane Lake Visitor and Tourism Bureau, and International Falls Area Convention & Visitors Bureau, as well as each community's Chamber of Commerce. Visitor information can be picked up at the Voyageur Country [illegible] Center and the Travel Information Centers in Anchor Lake, International Falls, [illegible].

Most communities also have a web site that provides visitor information. Web site locations and addresses and phone numbers for each community are listed here.

Ash River Commercial Club
Ash River Trail
Orr MN 55771
[illegible] or [illegible]-2061
www.ashriver.com

Crane Lake Visitor & Tourism Bureau
7238 Handberg Road
Crane Lake MN 55725
218/993-2901 or 800/362-7405
www.cranelake.org

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International Falls Chamber of Commerce
301 2nd Avenue
International Falls MN 56649
800/FALLS-MN
www.intlfalls.org (focuses locally)

International Falls Convention & Visitors Bureau
301 2nd Avenue
International Falls MN 56649
218/283-9400 or 800/FALLS-MN
www.rainylake.org (promotes tourism in the area and region)

Kabetogama Tourism Bureau
Kabetogama Lake Association
9707 Gamma Road
Lake Kabetogama MN 56669
218/875-2621
800/524-9085
www.kabetogama.com

Orr Chamber of Commerce
[illegible]
www.[illegible]

Ranier City Clerk
P.O Box 186
Ranier MN 56668
218/286-3311

Voyageur Country Orr Area
Information Center
4429 Highway 53
PO Box 236
Orr MN 55771
218/757-3932

Fort Frances Chamber of Commerce
474 Scott Street
Fort Frances, Ontario
Canada P9A 1H2
800-820-FORT (3678)
807-274-5773 FAX: 807-274-8706
http://ff.lakeheadu.ca/~thefort/chamber.html

## E.1.3. INFORMATIONAL AND EDUCATIONAL MATERIALS NOW AVAILABLE FROM THE MINNESOTA OFFICE OF TOURISM

Minnesota Office of Tourism: www.exploreminnesota.com 800/657-3700

Main Office
500 Metro Square
121 7th Place East
St. Paul MN 55101

Northeast Regional Office
320 West 2nd Street, Suite 707
Duluth MN 55802

Minnesota Explorer Newspaper - covers the whole state
3 issues published: fall, winter, spring/summer (720,000 copies)
Statewide Travel Guide - arranged regionally
designed for out-of-state visitors, more detailed

[redacted]

[redacted]

[redacted]

[illegible]

The actions proposed in the [illegible] F.1.1, F.1.2, [illegible] proposed [illegible] development [illegible] as well as [illegible] Statement, which evaluates the impacts of the proposed action can be found [illegible]

The VUIP only presents components of the modified proposed action and not all alternatives because the modified proposed action is the management direction recommended at this point in the process. When the final GMP is approved, the VUIP will reflect the approved proposed action.

### F.1.1. VISITOR USE AND FACILITIES IN THE PARK — MODIFIED PROPOSED ACTION

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[illegible] staff implement a permit system for overnight [illegible] and [illegible] 2002 (one and temporary residents and private landowners [illegible] registration permit system would be [illegible] to make it easy [illegible] would not direct visitors to specific overnight sites. All overnight [illegible] designated sites (including overnight in-water anchoring) would be [illegible]. The purpose of the permit system would be to gather information on [illegible] visitors about park conditions, activities, and rules. A feasibility study [illegible] within within three years of the approval of this general management [illegible] funding and staffing were available, to address such issues as fees, permit [illegible] and system management. The study would be developed with public input [illegible] most appropriate overnight permit system that should be used by the park. If [illegible] would be found, the National Park Service would begin implementing a [illegible] as approved.

[illegible] group permits for tent camping groups with more than 18 people would be implemented [illegible] 2002. This permit system would allow park staff to contact large groups, [illegible] party size limits for different sites, encourage visitors to split into smaller groups, and [illegible] information on the use of the park. No sooner than 2002 a no-fee permit system would also [illegible] visitors traveling together with more than two houseboats. Once the overnight permit [illegible] study (described above) was approved, any recommendations relating to groups would be implemented.

[illegible] Use Fees. The feasibility study for the overnight permit system would also examine the [illegible] implementing a fee system to use certain park facilities, such as campsites and parking [illegible] would be completed by 2005 (or within three years after the general management [illegible] funding and staff were available. Recommended actions would be developed [illegible] fees for day use are not proposed and would not be implemented. The [illegible] would begin implementing the approved facility use fee recommendations soon [illegible] feasibility study.

[illegible] and Resource Monitoring. Park staff would establish a monitoring system to [illegible] use patterns, visitor needs and experiences, measure impacts of day and [illegible] and other impacts. The information from the no-fee permit system [illegible] study would be used as part of the monitoring program. [illegible] park resource conditions and visitor experiences during [illegible] implementation. Visitor use and trends data would be gathered to provide [illegible] the establishment of appropriate carrying capacities, the [illegible] of the visitor experience, and assurance that facility development would [illegible] of visitor facilities would be based on a strategy plan using a method [illegible] Visitor Experience and Resource Protection (VERP) methodology [illegible] current and potential visitor use patterns and demands, desired [illegible] and resource conditions.

434

## Water Management Areas

### *Integrated Use Area (Motorized and Nonmotorized Use)*

**Integrated Use.** Year-round nonmotorized and motorized uses (including appropriate watercraft, private fixed-wing aircraft, and snowmobiles) would continue on the park's four major lakes and on the seven designated interior lakes (Locator, War Club, Quill, Loiten, Shoepack, Little Shoepack, and Mukooda).

To minimize conflicts between motorized and nonmotorized boat users on the major lakes, education and outreach programs would be developed that focus on boating etiquette. Publications would also be developed on suggested paddle routes within the integrated use zone of the park. The publications would clarify that motorized uses are allowed along suggested paddle routes.

**Overnight Houseboat Use.** Under the modified proposed action a houseboat management plan would be developed with public input as a high priority and would be completed by 2006, if funding and staff were available. The plan would study a range of topics related to houseboats such as commercial and private houseboat use, graywater management, users' needs and desires, and the appropriate number of houseboats that should be permitted in the park at any one time. The findings from studies done for the houseboat management plan would be used to determine the limit on the number of overnight houseboats.

While the houseboat management plan was being developed, an interim limit would be established that would permit 60 houseboats per basin to remain in the park overnight, or a park total of 120 overnight houseboats. This interim limit would be implemented in 2002 through the use of a free overnight houseboat permit system. A monitoring system would be established to gather data on houseboat use.

Because many visitors desire a balance between houseboat and tent overnight use in the park, creel survey data from 1986 to 2000 were used to generate a viable and defensible interim limit. Other information that helped guide the interim number of houseboats was the knowledge that the park was established to protect its outstanding scenery. Park managers have received complaints about the number of houseboats in the park when the park use was only in the 30s for each basin in 1999. The visual dominance of increased numbers of houseboats conflicts with the park's purpose to protect the scenery. Also, NPS regulations state that overnight visits in the park are limited to 30 calendar days per year.

Houseboat use has increased significantly over the last five years, with an 87% increase in the Rainy Lake Basin since 1996 (data for the Namakan Basin were only collected for 1998 and 1999, and a peak of 36 houseboats was counted each of those years). Creel data for houseboats at peak times in 1999 show 34 houseboats in the Rainy District and 36 houseboats in the Namakan District. Based on the creel data, if houseboat use continued at the current rate to 2015 there would be 120 houseboats in the Rainy Lake District and 56 in the Namakan District during peak times. These projections indicate that houseboat use would need to be managed if the park was going to balance houseboat and other types of overnight use. An interim limit of 60 overnight permits per basin would ensure that the current level of houseboat use in the park would be accommodated at least until 2005, and it would allow for houseboat numbers to grow based on the current peak rate.

No limited concession contracts with commercial houseboat companies would be established. Sanitation system compliance certificates for blackwater containment would be required for all houseboats in park waters.

425

[illegible] motorized [illegible] — use to [illegible] Lake [illegible] Falls [illegible] and the Kettle Falls Hotel — would continue. Private [illegible] on the four major lakes and the seven designated interior lakes ([illegible], Loiten, Shoepack, Little Trout, and Mukooda).

If the National Park Service was notified by the Federal Aviation Administration that a commercial [illegible] was to be approved to give air tours over the park, an air tour management plan would need to be developed before any such use could be approved. The air tour management plan would address [illegible] to flights into, out of, within, and over Voyageurs National Park.

**Boats on Interior Lakes.** The park would continue to provide nonmotorized boats on some interior lakes; user fees would be charged. Fees would go into effect no sooner than the summer of 2002.

**Snowmobile Trails and Safety Portages / Vehicular Access.** To make snowmobiling safer, the Moose Bay snowmobile portage would be replaced with a portage at Rusty Bay. However, if this option were not viable due to agreements that must be made with private landowners, or if the Rusty Bay trail had to be closed in the future for unforeseen reasons, the Moose Bay portage would be reopened. Snowmobile clubs would develop and maintain that section of the Rusty Bay trail/portage outside the park.

The Mukooda Lake snowmobile portage would be rerouted along the winter truck route. The portage would be redesigned to make it safer for motorized users and to minimize impacts to cultural resources. Only trucks with a permit would be allowed to use the truck route. Truck permits would be issued later in the winter after the main snowmobile season. The permits would be only for non-commercial use. Permits would be required no sooner than the winter of 2001–2.

**Special Use Zone.** The special use zone would be continued, and special events — such as sports, pageants, regattas, public spectator attractions, entertainment, ceremonies, and encampments — would be permitted by the superintendent when (1) there was a meaningful association between the park area and the event, and (2) the event would contribute to visitor understanding of the significance of the park area. However, a permit must be denied if the event would

- impair park resources
- create an unsafe or unhealthful environment for other visitors or employees
- be contrary to the purposes for which the park was established
- or unreasonably interfere with the atmosphere of peace and tranquillity, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park; NPS interpretive, visitor service, administrative, or other activities; NPS concessioner or contractor operations or services; or other existing, appropriate park uses

The superintendent must ensure that appropriate permit conditions are imposed for special events.

Motorized racing uses would not be permitted in the special use zone.

The superintendent would not permit the public staging of special events that are conducted primarily for the material or financial benefit of organizers or participants or would be commercial in nature; or [illegible] of publicity; or for which a separate public admission fee [illegible] or specially designated locations that are suitable and [illegible] "by-invitation-only" events. Admission fees for, or [illegible] at group campsites. Large-scale events would be managed following the [illegible] (NPS [illegible]).

*No-Wake Water Area*

No areas for no-wake boating would be established.

*Nonmotorized Use Area*

Integrated motorized and nonmotorized summer and winter use would continue to be allowed on Locator, War Club, Quill, Loiten, Shoepack, Little Trout, and Mukooda Lakes. Only nonmotorized uses would be allowed on all other interior lakes.

**Land Management Areas**

*Developed Areas*

Visitor Centers. Year-round operations would be continued at the Rainy Lake visitor center. At the Ash River and Kabetogama Lake visitor centers, hours and seasons of operation would be expanded or maintained, based on demand. At Crane Lake the National Park Service would cooperate with other agencies in developing a multi-agency year-round visitor center, whose hours and seasons of operation would be determined by demand.

The expansion of visitor centers would be minimized, and all existing centers, along with the Kettle Falls facility, would be maintained. Outdoor exhibits and seasonal facilities would be developed, but the intent would be to minimize disturbance to resources while providing greater visitor interpretation. Visitor facilities would be sustainable and durable.

Parking. The expansion of parking lots would be minimized in the park. Park staff would work with partners to provide additional parking and shuttle services outside the park. At the Rainy Lake visitor center parking issues such as short- and long-term parking, and the need for an overflow lot would be addressed.

Boat Launches. Launch areas for nonmotorized users would be developed at all visitor centers.

Bicycle and Pedestrian Access. Bike lanes or separate paths would be developed along entrance roads to the park's visitor centers. Park staff would pursue the development of trail connections or linkages to existing bikepaths outside the park. An additional shoulder would be needed in some areas to provide for safe routes.

The National Park Service would work with partners to connect the bicycle trail portions of the Kabetogama–Ash River trail system to area bike paths.

Overnight Facilities. No tent or houseboat sites would be provided in developed areas where there is high visitor traffic (i.e., no group tent sites at visitor centers or within the Kettle Falls Historic District).

[illegible] in order to provide a less crowded and more secluded camping [illegible] fewer developed sites would be provided than those proposed in the [illegible] *Site Management Plan*. Between 2[illegible] and 320 developed sites [illegible] existing and new sites), compared to about 400 sites under alternative [illegible] developed sites, a monitoring system would be established to collect [illegible] (revegetation, site locations, distances between sites, etc.) and [illegible] *and Backcountry Site Management Plan* would be revised. All new tent, [illegible] sites would have to meet the site selection criteria outlined in the *Lakecountry and Backcountry Site Management Plan* (e.g., latrine potential, island sites, and no critical resource [illegible]). The site selection criteria in the *Lakecountry and Backcountry Site Management Plan* would continue to be used. Proposed sites in that plan that would not be developed include those that did not meet the site selection criteria or those that would create a higher density than that established for lakecountry subzones under this alternative. Sites that were not identified in the *Lakecountry and Backcountry Site Management Plan* could be developed if they met the site selection and subzone density criteria. Compared to alternative 1, most of the lakecountry area site development would be moderate or low density (see "Density of Use" below). Day use and overnight sites would be developed as allowed by funding. Generally 5–10 sites per year would be built.

The highest priority would be to develop day use sites. These sites would include standard day use sites, while others would be visitor destinations, defined as special interpreted natural and cultural resource destination areas. Visitor destinations would have some degree of facilities.

To preserve the quality of the experience for visitors and to manage resource disturbance, the maximum party size at individual tent sites in the lakecountry would be 9 people at small sites and 18 people at large sites, with a maximum of 30 people at group sites (see table 1). To provide for houseboat groups that desire to be together, houseboat sites could accommodate up to two houseboats per site with 12 people maximum per boat. Use limits would be strictly enforced.

Density of Use. The lakecountry area would be divided into three subzones. The subzones would range from high to low density and would define the number of day and overnight sites within a 1/2-mile radius. The subzones were generated based on existing density of use, natural and cultural resource [illegible], [illegible] to development, and the desire to provide areas with a range of densities. Most of the lakecountry shoreline would be designated as moderate density. The amount of each subzone [illegible] area would be as follows:

[illegible] (high density: three or more sites within a 1/2-mile radius) — about 130 miles
[illegible] density: fewer than three sites within a 1/2-mile radius) — about 2[illegible]0 [illegible]
[illegible] (low density: a maximum of one site per 1/2-mile radius) — about 240 miles

[illegible] park campsites would be examined to ensure that they met the cri[teria] [illegible] *and Backcountry Site Management Plan* as well as the new distance [illegible] [illegible] would be corrected to prevent resource damage, [illegible] as necessary. If as a result of the comprehensive monitor[ing] [illegible], then excessively damaged sites would be [illegible] "[illegible] Undeveloped Sites" below).

[illegible] developed tent sites until 2 P.M. Day use would not be allowed [illegible] equipped with vault toilets. Day use, with visitors being able

[illegible]

| [illegible] | [illegible] | [illegible] |
|---|---|---|
| Tent campsites | [illegible] | [illegible] |
| Small campgrounds | [illegible] | [illegible] |
| Group campsites | [illegible] | [illegible] |
| Houseboat sites | [illegible] | [illegible] |
| Day use sites | 20 (including 1 universally accessible site in each cluster) | [illegible] |
| Visitor destination day use sites (interpreted sites) | 15–20 | Determined by resource capacity and visitor demand |

to have fires, would only be permitted at developed sites. Day use without fires would be allowed at undeveloped sites unless an area was closed for resource protection or visitor safety. The day use of developed tent sites would be considered in the overnight permit system feasibility study.

**Overnight Use at Undeveloped Sites.** The use of undeveloped sites by tent campers and houseboaters would continue to be allowed as long as they were 200 yards from a developed site and 1/4 mile from a park developed area. However, under the proposed action visitors would be encouraged to use developed sites whenever possible so as to reduce resource impacts.

A monitoring study would be conducted in conjunction with the no-fee overnight permit system for three years following the approval of the general management plan, assuming adequate funding and staffing were available. This study would determine if the use of undeveloped sites was causing unacceptable resource damage (e.g., sanitation problems, vegetation trampling, or out-of-control fires). The monitoring study would separately evaluate the Rainy and Namakan basins, as well as tent campers and houseboaters. If the monitoring study found that overnight use at undeveloped sites caused negative impacts, then that use would be phased out or other strategies would be implemented.

**Fires and Firewood.** Open fires would only be allowed in metal fire rings at developed sites starting in the summer of 2005. In 2005 the use of liquid fuel camp stoves would be required for day or overnight use at undeveloped sites.

Dead and down firewood could be gathered except where prohibited. Visitors would be encouraged to bring their own firewood or buy it from local vendors.

**Visitor Destination Sites.** Visitors and the park's gateway communities have requested a greater range of opportunities for the public to explore and learn about the park's significant cultural and natural resources. To provide a range of experiences at sites that best exemplify the park's natural and cultural significance, to promote visitor understanding and appreciation of the park, and to provide visitor attractions, between 15 and 20 sites would be developed as visitor destinations. These sites would provide interpretation and picnic facilities at remote and dispersed locations throughout the park that would meet park visitor desires for active independent exploration. Implementation plans that address facilities and interpretive media would be developed for each visitor destination, and sites would be carefully monitored to ensure that features were appropriately managed. Facilities and interpretation would be tailored to each site and would be planned at a level that was appropriate and sustainable for that destination's use.

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[illegible] hiking trails, which were shown in the 1993 Wilderness [illegible]

- [illegible] on the Kabetogama Peninsula
- [illegible] Lake on the Kabetogama Peninsula
- [illegible] Kabetogama Lake
- [illegible] Wildlife Refuge near Sand Point Lake
- [illegible] Lake) loop trail

[illegible] a multiuse Kabetogama to Ash River trail system would be developed for [illegible] summer and winter use. This trail would be inside and outside the park. [illegible] extending the Kabetogama–Ash River trail to Crane Lake would be studied in [illegible] partners. If the extension proved feasible, it would be developed and maintained as a [illegible]

In addition, short interpretive trails at some visitor destination sites (geared either to cultural or natural [illegible]) would be provided.

**Hut-to-Hut System.** No provisions would be made for developing a winter hut-to-hut system in the park.

### [illegible] Areas

**[illegible] Camping** would be permitted throughout the park's primitive areas, with a maximum of six people per party. Starting in 2002, primitive area campers would be required to get a camping permit [illegible]. No open fires would be allowed, and campers would be expected to follow leave-no-trace guidelines.

## [illegible], VISITOR SERVICES, AND EDUCATION

### [illegible]

[illegible] The emphasis on visitor information, orientation, and interpretive services [illegible] staffing would be sought to implement these programs, as well as potential [illegible] visitors had ample opportunities to learn about and appreciate the [illegible] interpretive plan would be developed to guide the expansion of [illegible] exhibits, publications, and other educational tools. [illegible] on the park's mission, purpose, and significance to a depth [illegible] interpretive programs and projects would provide a timely [illegible]

[illegible] visitor orientation, interpretation, and safety [illegible] of publications. For example, [illegible] and informational brochures.

[illegible] would be expected to serve a greater [illegible] opportunities within the park, which are [illegible] beyond the present [illegible]

[illegible]

[illegible] Visitor contact and interpretive programs that provide safety education to visitors would be increased.

Staffing levels identified in the 1995 *Law Enforcement Needs Assessment* would be pursued so as to be capable of responding to visitor emergencies in a timely manner. However, the level of response would depend on the visitor experience desired; for example, visitors in primitive areas would be expected to be more self-reliant than visitors in lake-country areas. Emergency communications with the proper service providers would be improved by using up-to-date notification systems, improving monitoring, and better coordinating activities between agencies.

Concessions and Visitor Services. The current level of concession services (boat tours, lodging, food service, and boat rentals) would continue. Methods would be sought to increase the economic viability of these operations, thus making them more stable. Additional services (such as providing tour boats from other locations, and water taxi service) could be considered.

### Water Management Areas

#### *Motorized Use Area*

Interpretive programs would be expanded to include maps, brochures, and other materials from a water-based perspective to show visitors the historic voyageurs' routes, geologic resources, wildlife, and other historic uses of these waterways.

### Land Management Areas

#### *Developed Area*

In partnership with other entities, an institute for diversified educational opportunities would be developed. The educational institute could help supplement the park's interpretive program and provide special classes, programs, and research to expand learning opportunities based on the park's mission, purpose, and significance. The institute could be held in a number of different places in order to reach a wider audience.

## [illegible] AN APPROPRIATE LEVEL AND TYPE OF [illegible] ACTION

[redacted]

### [illegible] Modified Proposed Action

**[illegible] Management**

**Overnight Permit System.** A no-fee, self-registration permit system for overnight summer and winter use would be implemented no sooner than 2002 (use and occupancy residents and private landowners would be exempted). The no-fee, self-registration permit system would be structured to make it easy for visitors to obtain permits and would not direct visitors to specific overnight sites. All overnight users at both developed and undeveloped sites (including overnight in-water anchoring) would be required to obtain these permits. The purpose of the permit system would be to gather information on the use of sites and to educate visitors about park conditions, activities, and rules. A feasibility study would be completed by 2006 (or within within three years of the approval of this general management plan), assuming adequate funding and staffing were available, to address such issues as fees, permit distribution, regulations, and system management. The study would be developed with public input and would establish the most appropriate overnight permit system that should be used by the park. If feasible recommendations could be found, the National Park Service would begin implementing a permit system as soon as approved.

No-fee overnight group permits for tent camping groups with more than 15 people would be implemented no sooner than 2002. This permit system would allow park staff to contact large groups, discuss appropriate party size limits for different sites, encourage visitors to split into smaller groups, and gather information on the use of the park. No sooner than 2002 a no-fee permit system would also be required for [illegible] traveling together with more than two houseboats. Once the overnight permit [illegible] study (described above) was approved, any recommendations relating to groups [illegible]

[illegible] The feasibility study for the overnight permit system would also examine the [illegible] a fee system to use certain park facilities, such as campsites and parking [illegible] would be completed by 2006 (or within three years after the general management [illegible] funding and staff were available. Recommended actions would be developed [illegible] fees for day use are not proposed and would not be implemented. The

National Park Service would begin implementing the approved facility use [illegible] after approval of the feasibility study.

**Visitor Experience and Resource Monitoring.** Park staff would establish a monitoring program to understand seasonal visitor use patterns, visitor needs and experience, resource impacts of day and overnight use, concession needs, and other impacts. The information from the no-fee permit system and from the overnight permit feasibility study would be used as part of the monitoring program. Indicators and standards for monitoring key park resource conditions and visitor experiences during the summer and winter would be established. Visitor use and trends data would be gathered to provide information for the preservation of resources, the establishment of appropriate camping capacities, the protection of the quality of the visitor experience, and assurances that facility development would match needs. The development of visitor facilities would be based on a strategy plan using a method such as the National Park Service's Visitor Experience and Resource Protection (VERP) methodology or a similar system that identifies current and potential visitor use patterns and demands, desired visitor experiences, and resource conditions.

### Water Management Areas

#### *Motorized Use Area (Motorized and Nonmotorized Uses)*

**Overnight Houseboat Use.** Under the modified proposed action a houseboat management plan would be developed with public input as a high priority and would be completed by 2005, if funding and staff were available. The plan would study a range of topics related to houseboats such as commercial and private houseboat use, graywater management, users' needs and desires, and the appropriate number of houseboats that should be permitted in the park at any one time. The findings from studies done for the houseboat management plan would be used to determine the limit on the number of overnight houseboats.

While the houseboat management plan was being developed, an interim limit would be established that would permit 60 houseboats per basin to remain in the park overnight, or a park total of 120 overnight houseboats. This interim limit would be implemented in 2002 through the use of a free overnight houseboat permit system. A monitoring system would be established to gather data on houseboat use.

Because many visitors desire a balance between houseboat and tent overnight use in the park, creel survey data from 1986 to 2000 were used to generate a viable and defensible interim limit. Other information that helped guide the interim number of houseboats was the knowledge that the park was established to protect its outstanding scenery. Park managers have received complaints about the number of houseboats in the park when the peak use was only in the 30s for each basin in 1999. The visual dominance of increased numbers of houseboats conflicts with the park's purpose to protect the scenery. Also, NPS regulations state that overnight visits in the park are limited to 30 calendar days per year.

Houseboat use has increased significantly over the last five years, with an 87% increase in the Rainy Lake Basin since 1996 (data for the Namakan Basin were only collected for 1998 and 1999, and a peak of 36 houseboats was counted each of those years). Creel data for houseboats at peak times in 1999 show 34 houseboats in the Rainy District and 35 houseboats in the Namakan District. Based on the creel data, if houseboat use continued at the current rate to 2015 there would be 130 houseboats in the Rainy Lake District and 56 in the Namakan District during peak times. These projections indicate that houseboat use would need to be managed if the park was going to balance houseboat and other types of overnight use. An interim limit of 60 overnight permits per basin would ensure that the [illegible] at least until 2005, and it would [illegible]

[illegible] houseboat operations would be established. [illegible] would be required for all [illegible]

[illegible] The park would continue to provide concessioned boats on some interior [illegible] would be changed shortly after the general management plan was approved.

### Land Management Areas

### Developed Areas

**Visitor Centers.** Year-round operations would be continued at the Rainy Lake visitor center. At the Ash River and Kabetogama Lake visitor centers, hours and seasons of operation would be expanded or reduced based on demand. At Crane Lake the National Park Service would cooperate with other agencies in developing a multi-agency year-round visitor center, whose hours and seasons of operation would be determined by demand.

### Backcountry Areas

**Day-use and Overnight Use Sites.** In order to provide a less crowded and more secluded camping experience for [illegible] visitors, fewer developed sites would be provided than those proposed in the [illegible] *Lakecountry and Backcountry Site Management Plan.* Between 200 and 220 developed sites would [illegible] (including existing and new sites), compared to about 425 sites under alternative [illegible] number of developed sites, a monitoring system would be established to collect [illegible] visitor experience (crowdedness, site locations, distances between sites, etc.) and [illegible] *Lakecountry and Backcountry Site Management Plan* would be revised. All new tent, [illegible] sites would have to meet the site selection criteria outlined in the *Lakecountry* [illegible] *Management Plan* (e.g., better potential, island sites, and no critical resource [illegible] the *Lakecountry and Backcountry Site Management Plan* [illegible]. Proposed sites in the plan that would not be developed include those that [illegible] or those that would create a higher density than that established [illegible]. Sites that were not identified in the *Lakecountry and* [illegible] could be developed if they met the site selection and criteria [illegible] of the lakecountry area site development would be [illegible]. Day use and overnight sites would be [illegible] sites per year would be built.

[illegible] day-use sites. These sites would include [illegible] day use [illegible] special interpretive natural and cultural [illegible] have [illegible] degree of facilities.

[illegible] distances, the maximum [illegible] would be 9 at each site and 12 people at [illegible] table 3. To provide for houseboat groups [illegible] up to two houseboats per site with 12 [illegible]

| [illegible] | [illegible] | [illegible] |
|---|---|---|
| [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] |
| [illegible] | [illegible] | [illegible] |

**Density of Use.** Most of the lakecountry shorelines would be designated as moderate density. The amount of each subzone within the lakecountry area would be:

subzone 1 (high density: three or more sites within a ½-mile radius) — about 135 miles
subzone 2 (moderate density: fewer than three sites within a ½-mile radius) — about 282 miles
subzone 3 (low density: a maximum of one site per ½-mile radius) — about 240 miles

**Overnight Use at Undeveloped Sites.** The use of undeveloped sites by tent campers and houseboaters would continue to be allowed as long as they were 200 yards from a developed site and ½ mile from a park developed area. However, under the modified proposed action visitors would be encouraged to use developed sites whenever possible so as to reduce resource impacts.

Under the modified proposed action a monitoring study would be conducted in conjunction with the no-fee overnight permit system for three years following the approval of the general management plan. This study would determine if the use of undeveloped sites was causing unacceptable resource damage (e.g., sanitation problems, vegetation trampling, and out-of-control fires). The monitoring study would separately evaluate the Rainy and Namakan basins, as well as tent campers and houseboaters. If the monitoring study found that overnight use at undeveloped sites caused negative impacts, then that use would be phased out or other strategies would be implemented.

### F.1.2.3. Monitoring Visitor Experience and Resource Protection to Achieve an Appropriate Level and Type of Visitation

Another method for achieving an appropriate level and type of visitation involves monitoring what visitors are experiencing (e.g. seclusion or crowdedness, quiet or noise, etc.) and the condition of the park's resources (e.g. water quality, campsite condition, etc.). In July 1999, the VUPP Consultation Group requested a presentation on carrying capacity by Professor Dave Lime from the University of Minnesota. In October 1999, Professor Lime presented information on methods for monitoring visitor experience and resource protection.

Professor Lime explained techniques used to determine what visitors consider an acceptable level of crowdedness and resource conditions at Arches National Park. Some of the examples might be used as a basis for evaluating visitor experience and resource conditions at other parks such as Voyageurs. For example, at Voyageurs we could conduct surveys that show visitors a series of photos containing an increasingly greater number of watercraft on one of the four major lakes. At some point, survey results would show when visitors no longer accept the level of use observed and start to get turned off by their experience.

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[illegible] of photos showing different conditions found at a developed [illegible] would determine a level when conditions indicate a [illegible].

[illegible] in the draft proposed action, would help the park determine at [illegible] visitation. Until we know better how visitors experience the park and [illegible] conditions, we will struggle to achieve an appropriate level of visitation.

## [illegible] AND EDUCATIONAL MESSAGES AND MATERIALS — [illegible] ACTION

[redacted]

### [illegible] Proposed Action

**Interpretation, Visitor Services, and Education**

**[illegible]**

[illegible] Programs. There would be increased emphasis on visitor information, orientation, and [illegible] additional staffing would be required to implement these programs, as well as [illegible]. To ensure that visitors had ample opportunities to learn about and [illegible], a comprehensive interpretive plan would be developed to guide the [illegible] the development of exhibits, displays, publications, and other educational [illegible] focus on themes based on the park's mission, purpose, and significance to a [illegible] reading levels. Interpretive programs and projects would provide a [illegible] and visitor use impact.

[illegible]. The funding of visitor orientation, information, and safety [illegible] increased staffing and funding of publications.

[illegible] Educational programs would be expanded to cover a greater [illegible]. Educational opportunities within the park, which are [illegible] opportunities beyond the present environmental [illegible] would primarily be expanded by using new communi[illegible] classrooms outside the local area.

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### F.1.3.3. Additional Informational and Educational Materials Suggested for Development by the Staff

- boating etiquette brochure; using the waters together
- voyageurs route and history
- Native Americans and their history and current use of this area
- informational brochures on pre-park activities: commercial fishing, [illegible] Point airport
- pre-trip preparation and planning for visitors (video and Internet)
- more interpretive signs along hiking trails
- interpretive guide for boaters that describes the natural and cultural sites along the shorelines in each major lake; guides for the lakes similar to trail guides

## [illegible] FOR THE GATEWAY COMMUNITIES: [illegible] AND SUGGESTIONS

[illegible] COLLECTED OUTSIDE THE PARK

[redacted]

**[illegible] - Suggested Actions**

**Region**

- Voyageurs Interpretive Center (envisioned for the International Falls area)
- Bear Center (different communities are competing for the Minnesota Science Museum's bear exhibit; the exhibit would be the main component of a bear center)
- Highway 53 - widen to four lanes from Virginia to International Falls
- [illegible] Rainy Lake Visitor Center (suggested agencies: National Park Service, U.S. Forest Service, [illegible] Tourism & Transportation, and Minnesota Department of Natural Resources)
- State Park - As identified in the Minnesota State Park System Land Study published in August [illegible] by the Minnesota Department of Natural Resources, the park's gateway communities are not within [illegible] of a State Park. This region is a candidate for a State Park. (Local support and [illegible] will be key components of establishing a state park in the area.)
- [illegible] State Forest campground - improvements
- [illegible] vehicle campground

**International Falls Convention & Visitors Bureau Action Plan (adopted February 1999):**

- Support [illegible] of a cold weather testing facility
- [illegible] of a conference facility
- [illegible] cooperative efforts to use established forest trails for hiking, biking, and [illegible]
- [illegible] 53 to aid increased visitation
- [illegible] water-based RV park and campground with access to Rainy Lake
- [illegible] trails
- [illegible] Heritage Tourism Program

[illegible] Community Initiative (drafted March 1999)

[illegible] (from the Initiative report)

[illegible]

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- only 4 hours from Twin Cities
- have been gradually improving and building roads for multi-season tourism
- on major thoroughfare to Canada
- close to many major snowmobile and cross-country ski trails
- many public lands for hunting, ecotourism and recreation
- several adjoining wetlands [illegible]
- unique visitors' center and walk with public facilities on lakeshore

**Weaknesses**
- there is a need for additional specific recreational activities
- a lack of dining facilities for the new type of tourist we're attracting
- insufficient lodging for large groups, weekend overnight, family reunions, etc.
- we need to do a better job marketing to prospective residents, new businesses, tourists
- community does not present an attractively visible theme
- septic systems and effluent are still a problem; ex. lake eutrophication
- we could increase citizen participation in planning, networking with other communities

**Opportunities**
- our area could create a desirable setting for large groups
- we have many opportunities to increase year-round tourism
- excellent time to create an area advertising/marketing coalition
- nature tourism (e.g. birdwatching) is profitable - we are in a good location for this
- we need to promote Orr as "Gateway to Voyageur Country" (explore with VNP)
- capitalize on our proximity to network of area lakes
- coordinate and co-promote winter tourism and recreation with others
- develop support for mountain biking on excellent area trails

**Kabetogama Tourism Bureau - Long Range Strategic Plan (November 1998)**
*12-18 month action plan*
- do landscaping and signage at the walleye statue in accordance with the grant received
- continue to run bingo and pursue other ideas for future events. Tie this into customer survey.

*Three Year Goals*
- develop midweek activities
- biking and hiking trails should be built or at least fully planned out
- conduct clean up and provide up to date signage in the entry corridor
- upgrade walleye statue area

*Five-Year Vision*
- more activities for people
- have a convention center or meeting facility for groups up to 300
- upgrade facilities and the entrance corridor to make things more eye appealing
- develop corridors of commerce between the four entry communities - not just reliant on the park official boat tours
- the number of resorts in the area will not decrease

**Crane Lake Visitor & Tourism Bureau - Bureau's strategic plan needs updating**
**Ash River Commercial Club - does not have a strategic plan**

## F.2.2. [illegible] OF ACHIEVING AN APPROPRIATE LEVEL AND TYPE OF VISITATION

The Visitor Use and Facilities Plan Ad Hoc Consultation Group did not discuss this topic in much detail beyond each community needing to determine what their infrastructure can support relative to visitation. If increased visitation to the area is the desired goal, then each gateway community needs to assess their needs for development and how and where they can accomplish their objectives. The park will continue to contribute expertise, cooperation and support as personnel and funding allow.

[redacted]

### F.2.2.2. Suggested Actions

**International Falls Convention & Visitors Bureau Action Plan** (adopted February 1999)
Assist in developing an easy to use tracking system for motels, resorts, and tourism attractions to measure success of marketing efforts.

**Kabetogama Tourism Bureau - Long Range Strategic Plan** (November 1998)
*12-18 month action plan*

- explore new markets
- conduct a customer survey on what they want
- increase emphasis on winter marketing

*Five-Year Vision*

- increased number of tourists
- more tourism year around and more capacity during the winter
- have winter occupancy rates equal to summer occupancy rates for those that are open during the winter

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450

## F.2.3. INFORMATIONAL & EDUCATIONAL MATERIALS AND PROGRAMS — GATEWAY COMMUNITIES

[redacted]

### F.2.3.1. Suggested Actions for All Gateway Communities

- develop a survival bag with rules and other information to help visitors have an enjoyable visit
- develop a rainy day and area activities list available at lodging establishments
- offer fishing seminars and other programs at resorts or other location
- write information that promotes the park for what it is; don't promote the major lakes as being non-motorized, etc.

**Kabetogama Tourism Bureau - Long Range Strategic Plan (November 1998)**

*12-18 month action plan*
- finalize the web site

*Three Year Goals*
- put up a sign by the gateway to advertise the area

*Five-Year Vision*
- better name recognition for Voyageurs National Park and Lake Kabetogama - separate from the Boundary Waters Canoe Area
- highway signage and billboards on Highway 3 promoting the resort area

## F.2.4. OTHER COMMENTS

The seaplane base at Kabetogama Lake indicated on the Minnesota State Map needs to be deleted.

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[redacted]

### G.1.3.2. Suggested Actions for All Gateway Community Tourism Bureaus

- spread out visitation over the year by promoting the shoulder season or periods of low visitation
- develop and promote summer events to draw people to the area
- expand winter marketing
- determine specific advertising targets
- pursue different types of uses beyond fishing and motorboating
- pursue a cooperative effort for marketing to establish one identity for the area

### G.1.3.3. International Falls Convention & Visitors Bureau Action Plan (February 1999)

**Long Range Vision**
- positive public relations and resolution of political issues (Canadian fishing issues)
- use appropriate cutting edge technology to market the area
- Voyageurs National Park fully developed and marketed
- winter tourism developed and expanded
- transportation system into the area improved
- area economy strong and diverse
- well developed tourism infrastructure

**Action Items**
- pursue improved air and surface transportation into the area
- get the City Council and County Commissioners to do a visioning plan so all parties are in agreement and communication on tourism issues
- support settlement of US/Canada border issues that relate to both fishing and travel
- educate the community on the importance of tourism; develop a five-year plan
- support/create events that have the capacity to draw visitors to the area
- in concert with park management, proactively pursue further development within Voyageurs National Park
- expand internet presence and keep it current; use to effectively market the area
- continue with, and expand where appropriate, partnerships with other agencies and organizations [illegible]
- assist in developing an easy to use tracking system for motels, resorts, and tourism attractions to [illegible] marketing efforts
- [illegible] state advertising dollars
- identify problems people are having with signage and take corrective action
- [illegible]

459

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- pursue media writers
- continue to develop and implement a Rainy Lake fishing promotion plan
- develop and implement a group tour marketing program
- implement an improved plan for shoulder season business
- assist in the development and distribution of a comprehensive recreation systems map
- develop, implement, and evaluate a winter marketing program
- work to improve relationships among Voyageurs National Park communities

### G.1.3.4. Orr's Voyageur Country Initiative (drafted March 1999)

*Draft Goals for Recreation*
- establish a more visible presence for Voyageurs National Park in Orr
- develop joint area marketing/advertising council

### G.1.3.5. Kabetogama Tourism Bureau - Long Range Strategic Plan (November 1998)

*12-18 month action plan*
- appoint a person to represent the Bureau on the Northern Lights Tourism Alliance
- develop and implement a marketing plan
- explore new markets
- determine costs of billboards, including initial costs, and annual lease rates for various sites
- conduct a customer survey on what they want
- finalize the web site
- coordinate Bureau marketing efforts with Voyageurs National Park Getaways
- increase emphasis on winter marketing
- maximize use of available grant money

*Three Year Goals*
- implement an effective promotional and marketing plan
- put up highway billboards for immediate impact on travelers
- have the web site up, workable, and effective
- figure out ways to generate more revenue to promote the area
- put up a huge sign by the gateway to advertise the area
- provide cooperative money for marketing Voyageurs National Park in all areas of advertising

*Five-Year Vision*
- provide money and cooperative efforts for a full-time fulfillment center for the Voyageurs National park area; would take or facilitate reservations
- have a more organized, defined marketing strategy in place
- highway signage and billboards on Highway 53 promoting the resort area
- develop group tourism business (not motorcoach)

### [illegible] Recommended Actions from Previous Marketing/Tourism Plans for All Gateway Communities

1985 Tourism Working Group Report - result of the pilot project described in the background section; accomplishments summarized in Appendix I.1.7.

1986 Bureau Report - *A Marketing Plan for Voyageurs National Park and Resort Area* - many recommendations have been accomplished (see Appendix I.1.7), but some have not and are still valid. They are listed below.

*These suggestions are directed toward the gateway communities. Voyageurs National Park is willing to assist with these action items, but the initiative and development must begin with the gateway communities.*

- Develop a Voyageurs National Park area-wide map and brochure describing the park, the gateway communities and their amenities, and providing a clear visual representation of where Voyageurs National Park and its gateways are located relative to both Minnesota and the continental United States.
- Develop a strong visual "logo" - the principal feature of which is its ability to graphically depict the park, its gateway communities and where they are located. Make this logo available to all resort owners for use on individual brochures and other promotional materials and for use on all other marketing communications including highway signage.
- Develop a strong nationwide media relations campaign emphasizing key markets. The campaign would focus on the placement of stories in the travel and outdoor sections of major market daily newspapers and include placements in local and national publications.
- Buy display advertising in Twin Cities major daily newspapers and metropolitan general-readership magazines, limited display advertising -- as permitted by budget limitations -- in the Chicago and Des Moines and Duluth markets.
- Establish a 24-hour 800 toll-free telephone inquiry number and lead response "kit," including a "passport" discount card for reduced lodging rates. The system would also note what generated the inquiry to track results.
- Develop a personal referral or "bounty" system to provide incentives for visitors to encourage their friends and relatives to visit; possibly integrated with the passport discount card.
- *Voyageurs Passport*
  - The Voyageurs Passport would be custom designed with appropriate graphics and explanatory copy. Presentation of the Passport will entitle the holder to a 5% discount (or other similar discount), good for the total room charge for an entire family at participating resorts. It can be used by a holder and his or her immediate family, but not by non-holders who are not members of the immediate family. All participating resorts would be listed, with phone numbers, in the passport.
  - The Passport would also be good for deeper discounts during the autumn and winter seasons.
  - The Passport would be given to each "regular" resort guest, one per family, on their departure and would be good for subsequent visits.
  - The Passport would also contain a perforated tear-off card with a place for the original holder's name. These cards can be given to others as a referral and then the original holder is entitled to another discount.
- Test a direct mail campaign to registered boat owners in Minnesota.
- Design and implement uniform signage to clearly identify each of the four entrances or gateways to the park and adjacent resort communities.
- Seek assistance for resort owners in the development of pricing and packaging of shoulder season and winter recreational opportunities.

- Convert summer season visitors to visitors returning for [illegible] [illegible] appropriate.
- Produce and distribute a series of recreation (e.g. hunting, [illegible], snowmobiling, etc.) radio public service announcements "sponsored" by the National Park Service and Voyageurs National Park for broadcast in Minnesota and other target markets.
- Signage - poor roadside identification of the gateways to the park - and to the gateway communities - is perhaps the single most visually noticeable problem facing [illegible] communities. While numerous private, state, and federal highway signs do in fact exist, they are typically either too small, obscured or misplaced. At each of the gateway turnoffs from Highway 53 [illegible] a large, well designed sign/billboard identifying the intersection as one of the four park/gateway community entrances. In our judgement, this is an important missed opportunity.
- Current snowmobilers are not the only market for increased winter activity. A loyal summer market already exists and stands the best chance of being converted cost effectively into return winter visitors.

[redacted]

## [illegible] PARTNERSHIPS

[redacted]

### E.1.1. EXISTING PARTNERSHIPS

Voyageurs National Park participates in a variety of partnerships and cooperative management efforts. Park partnerships focus on visitor safety and protection, visitor facilities (mainly trail maintenance), tourism promotion, and resource management. See Appendix I.1.2 for a list of existing partnerships.

The Rainy Lake Visitor Center conference room is available for meetings free of charge. Currently Boise Cascade, the School District and Lake States Interpretive Association regularly use the conference room.

Partnerships are a valuable component of park management. Park staff depend on partnerships for trail construction and maintenance, snowmobile trail grooming, and tourism and promotion. The Draft Proposed Action suggests the pursuit and establishment of additional partnerships for activities both inside and outside the park.

### E.1.2. PROPOSED PARTNERSHIPS

Areas identified for potential partnerships include:
- parking (shuttle service for additional parking)
- RV campground with lake access
- land based campground, preferably with lake access
- tourism and promotion
- maintenance and protection of historic structures and landscapes
- Crane Lake Visitor Center - including a community room for meetings and gatherings (suggested partners: National Park Service, U.S. Forest Service, U.S. Customs, Immigration and Naturalization Service, and Minnesota Department of Natural Resources)
- International Heritage Tour Route - this partnership would unite a number of attractions and organizations linked to the voyageurs history both in the United States and Canada

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## II.L.4. PROPOSED ACTIONS

### Park Operations, Facilities, and Partnerships

*Parkwide Management*

Partnerships. Relationships with surrounding public land protection and recreation agencies would be strengthened. The purpose would be to enhance preservation in and around the park and to provide facilities for visitors that are needed but inappropriate or unfeasible in the park (for example, an RV campground, a multi-agency visitor center at Crane Lake and regional trail linkages). Relationships with surrounding private landowners and communities would also be strengthened as a means to help provide needed visitor services, park-related education, and resource protection (e.g., septic regulations, water quality).

The National Park Service would work more closely with the Minnesota Department of Natural Resources, the U.S. Forest Service, the Ontario Ministry of Natural Resources, and other agencies to develop cooperative and unified ecosystem approaches to both fisheries and wildlife management. Efforts would be made to restore natural fisheries and to work toward the reestablishment of native wildlife species through unified management programs. A fisheries management plan would be developed, with a focus on managing sportfishing and developing strategies that emphasize the maintenance and reestablishment of native, self-containing fish populations.

Partnerships with educational, institutional, or private entities would be actively pursued to ensure the preservation and maintenance of cultural resources in the park. Cooperating agencies that provide visitor safety services in conjunction with the National Park Service would be actively supported. Park staff would continue to pursue and maintain memorandums of understanding with the Coast Guard, First Responder, local sheriffs, and the Minnesota Department of Natural Resources to help meet visitor needs.

## [illegible] APPENDICES

### [illegible]

- University of Minnesota Extension Service
  [illegible] & Expansion Strategies Program
  [illegible] of Applied Economics
  [illegible] Classroom Office Building
  University of Minnesota
  [illegible] Avenue
  St. Paul, MN 55108-6040
  612/625-[illegible]
- State Trails and Economic Development Program - low interest tourism loan program; this has been used a lot in southern Minnesota; not available to businesses without lodging which is a problem.
- Koochiching County has KoochCo - subsidized loan program
- Iron Range Resources and Rehabilitation Board (IRRRB) - covers St. Louis County

- [illegible]
  Scott [illegible]
  ARDC
  221 West First Street
  Duluth, MN 55802
  218-722-5545
  800-232-0707
  www.[illegible]

- Legislative Commission on Minnesota
  Resources (LCMR)
  65 State Office Building
  St. Paul, MN 55155
  [illegible]
  [illegible]
  www.commissions.leg.state.mn.us/lcmr/

- DNR Outdoor Recreation Program
  Dept. of Natural Resources
  [illegible]
  [illegible] Box 10
  [illegible]
  [illegible]
  [illegible]

- DNR Natural and Scenic Program
  Dept. of Natural Resources
  Office of Planning
  500 Lafayette Rd., Box 10
  St. Paul, MN 55155
  651-297-3168
  www.dnr.state.mn.us

- DNR Cooperative Trails Program
  Recreation Services Section
  Trails and Waterways Unit
  Dept. of Natural Resources
  500 Lafayette Rd.
  St. Paul, MN 55155
  651-297-3168
  www.dnr.state.mn.us

- National Trust for Historic Preservation
  1785 Massachusetts Ave. NW
  Washington, D.C.
  202-673-4063
  www.nthp.org

- NPS Parks and Recreation Programs
  National Park Service
  Recreation Grants Division
  P.O. Box 37127
  Washington, D.C. 20013
  www.nps.gov

- Blandin Foundation
  100 North Pokegama Ave.
  Grand Rapids, MN 55744
  218-326-0523
  www.blandinfoundation.org

- First Bank System
  P.O. Box 522
  Minneapolis, MN 55480

- McKnight Foundation
  [illegible]
  Minneapolis, MN 55402
  612-333-4220
  www.mcknight.org

- National Scenic Byways Program
  1440 New York Avenue
  Suite 202
  Washington, D.C.
  in Minnesota 612-779-5081
  www.byways.org/800-4-byways

- Minnesota Common Cents
  [illegible]

University of Minnesota Sustainable Development Partnership offers grants for research and extension projects that involve local agencies, businesses or organizations, and the University of Minnesota.

- Northeast Sustainable Development Partnership
  Okechukwu Ukaga, Executive Director
  University of Minnesota Extension Service
  Cloquet Forestry Center
  175 University Road
  Cloquet, MN 55720-9594
  Phone: (218) 879-0850 ext. 107

This partnership links University of Minnesota faculty to local communities, organizations, agencies, and businesses to solve local problems involving agriculture, natural resources, tourism, and community development. The partnership gets $200,000 annually to fund research and extension projects identified by a local Executive Board. Contact the partnership for guidelines to submit grant proposals. There are 5 recently developed partnerships covering multi-county areas in Minnesota.

## [illegible] [illegible] TIMEFRAME FOR THE GENERAL MANAGEMENT PLAN AND VISITOR USE AND FACILITIES PLAN

Summer 1998
- develop park's mission, purpose, and significance statements
- identify issues and concerns
- public scoping meetings

Fall 1998-Summer 1999
- compile and analyze public comments, issues and visions for the park's future
- identify alternative approaches for managing the park
- public review meetings on the proposed management alternatives
- meet with the Visitor Use and Facilities Plan Ad Hoc Consultation Group about the draft • proposed management alternatives
- compile and analyze public comments on the proposed management alternatives

Summer 1999 - Summer 2000
- evaluate the environmental impacts of the alternatives
- identify and develop a proposed action
- meet with the Visitor Use and Facilities Plan Ad Hoc Consultation Group
- develop the VUFP portion of the draft document
- review the draft VUFP with the Consultation Group

Summer 2000-Fall 2000
- prepare and publish the draft GMP/EIS and VUFP
- public review meetings and comment period on the draft GMP/EIS and VUFP

Fall 2000-Summer 2001
- edit and distribute the final GMP/EIS and VUFP

Fall 2001 and beyond
- implement plan

U62

## L1.3. VISITOR USE & FACILITIES PLAN CONSULTATION GROUP MEMBER LIST

**Federal Government**
Carol Booth
Superior National Forest
320 N. Hwy 53
Cook, MN 55723

Dave Tucci
Superior National Forest
8901 Grand Avenue Place
Duluth, MN 55808-1102

Ann Long Voelker
Chippewa National Forest
Route 3, Box 244
Cass Lake, MN 56633

**Tribal Government**
Ray Villebrun, Council Member
Bois Forte Reservation Tribal Council
P.O. Box 16
5344 Lakeshore Drive
Nett Lake, MN 55772

**State or Provincial Government**
Tim Campbell, Regional Manager
Minnesota Office of Tourism
Northeast Regional Office
320 West 2nd Street, Suite 707
Duluth, MN 55802-1402

Jay Leather, Superintendent
Quetico Provincial Park
Ontario Ministry of Natural Resources
108 Saturn Avenue
Atikokan, Ontario, CANADA P0T 1C0

Jim Wuolah, Regional Planner
Minnesota Department of Natural Resources
1202 Highway 2 East
Grand Rapids, MN 55744

Jim Willford, Regional Parks Manager
Minnesota Department of Natural Resources
1202 Highway 2 East
Grand Rapids, MN 55744

**Local Government**
Andy Pichotta
Arrowhead Regional Development Comm.
221 West First Street
Duluth, MN 55802

Steve Briggs
City of International Falls
City Hall
PO Box 392
International Falls, MN 56649

David Dill,
Economic Development Director
City of Orr
P.O. Box 237
Orr, MN 55771

Dan Diesel
Independent School District 361
900 Fifth Street
International Falls, MN 56649

Mike Forsman, Chair
Saint Louis County Commissioners
Fourth District
118 South 4th Avenue East
Ely, MN 55731

John McCarthy
City of International Falls
City Hall
PO Box 392
International Falls, MN 56649

Wade Pavleck
Koochiching County Commissioners
Courthouse
715 Fourth Street
International Falls, MN 56649

**Private entities experienced in the fields of outdoor recreation and visitor services**
Jim and Candace Bischoff
Island View Lodge
1817 Highway 11 East
International Falls, MN 56649

[illegible]
[illegible] Alternatives for
Voyageurs National Park
[illegible] County Road 21
International Falls, MN 56649

Alan Burchell
Kabetogama Lake Association
10434 Waltz Road
Lake Kabetogama, MN 56669

Bill and Dyann Congdon
Voyagaire Lodge and Houseboats
7576 Gold Coast Road
Crane Lake, MN 55725

Bill and Tom Dougherty
Rainy Lake Houseboats
2031 Town Road 488
International Falls, MN 56649

Kay Ebel
President, Ash River Commercial Club
Ebel's Voyageur Houseboats
10326 Ash River Trail
Orr, MN 55771

Butch Eggers
7455 Crane Lake Road
Crane Lake, MN 55725

Richard and Robin Gerbe
Northernaire Houseboats of Rainy Lake
2690 County Road 94
International Falls, MN 56649

Melvin Baughman
UM, College of Natural Resources
235 Natural Resources Admin Bldg
2003 Upper Buford Circle
St. Paul, MN 55108

Ted Gostomski
Sigurd Olson Environmental Institute
[illegible] Ellis Avenue
Ashland, WI [illegible]

[illegible], Executive Director
Voyageurs Region National Park Association
[illegible] North Third Street, Suite 104
Minneapolis, MN 55401-1202

Jo Kellerman
Friends of Voyageurs National Park
2762 County Rd 94
International Falls, MN 56649-8735

Glenn C. Maxham
Lake States Interpretive Association
3061 Lakewood Road
Duluth, MN 55804

Lori M. Nelson
Heartland Regional Director
National Parks and Conservation Association
P.O. Box 25354
Saint Paul, MN 55125

Lynne Olson
Izaak Walton League
5486 Nordling Road
Duluth, MN 55804

Rick Ovesen
Kettle Falls Hotel
10502 Gamma Road
Ray, MN 56669

Don Parmeter
Northern Resources Center
2814 County Road 94
International Falls, MN 56649

Michael Pesso
Wilderness Inquiry
1313 Fifth Street SE – Box 84
Minneapolis, MN 55414

Shawn Mason (October 99-present)
Phil Paulbeck (start-October 98)
International Falls Convention and Visitors
Bureau
301 Second Avenue
International Falls, MN 56649

Dave Peterson, President
Rainy Lake Sportfishing Club
P.O. Box 888
International Falls, MN 56649

Wade Watson
Voyageurs Adventure Outfitters
10002 Gappa Road
Ray, MN 56669

Diane Wessels
Northern Cross Kayaking
P.O. Box 583
Ranier, MN 56668

Tom Whatley
International Falls Area Chamber of Commerce
301 Second Avenue
International Falls, MN 56649

Kathy Wilson
Arrowhead Resort / Sight-See-Er Boat Tours
10473 Waltz Road
Ray, MN 56669

Barry Woods
Woody's Fairly Reliable Guide Service
P.O. Box 211
Ranier, MN 56668

David Zentner
Izaak Walton League
650 First Bank Place
Duluth, MN 55802

Paul [illegible]
1374 Taylor Avenue
St. Paul, MN 55104

**Meeting Facilitator**
Roger Williams
Office of Dispute Resolution
St. Paul MN

**Park Staff involved in meetings**
Roger Andrascik, Chief of Resource Management
Mary Graves, Cultural Resource Specialist
Carol Mann, former Interpretive Supervisory Park Ranger
Steve Mann, former Maintenance Foreman
Kathleen Przybylski, Planning Coordinator
Chuck Remus, Protection Supervisory Park Ranger
Jim Schaberl, Wildlife Biologist
Barbara West, Park Superintendent

## [illegible] [illegible] OF VISITOR USE AND FACILITIES PLAN AD HOC CONSULTATION GROUP

| | |
|---|---|
| August 21, 1998 | NPS distributed a scoping survey to all Visitor Use and Facilities Plan Consultation Group members and requested a response by September 18, 1998. The survey asked questions about visitor use and facilities, informational and educational materials, and visitor experience. |
| September 12, 1998 | NPS conducted an orientation boat tour of the Namakan District and Kettle Falls area for the Visitor Use and Facilities Plan Ad Hoc Consultation Group. During the tour, staff and group members discussed management issues facing the park and what issues the planning process should address. |
| February 3, 1999 | NPS conducted an alternatives review meeting with the Visitor Use and Facilities Plan Consultation Group. The Group reviewed the draft alternatives and associated maps in small groups; 35 members attended. |
| May 1, 1999 | NPS conducted a follow-up VUFP meeting because of concerns raised about the February 3, 1999 meeting. The group discussed the planning process, the actions suggested in past tourism/marketing reports and subsequent accomplishments, and suggestions for additional facilities inside and outside the park; 27 members attended. |
| June 8, 1999 | NPS conducted an alternatives review open house for the Visitor Use and Facilities Plan Consultation Group in Orr, Minnesota. The meeting included information stations that covered the following topics: planning process, existing conditions, Alternative 1, Alternative 2, and Alternative 3; 3 people attended the meeting. Many chose to attend the public meetings in their communities. |
| July 13, 1999 | VUFP Consultation Group meeting in Orr; 23 members attended the meeting. The Group and NPS discussed how visitors are counted and what has changed since the current formula was developed in 1992, visitor experience, number of developed sites, and future meeting agendas. |
| August 26, 1999 | VUFP Consultation Group meeting at the Rainy Lake Visitor Center; 21 members attended the meeting. The Group and NPS discussed no-wake areas, user fees, overnight permits/reservations, lakecountry and backcountry camping, and houseboats. |
| September 23, 1999 | NPS conducted a meeting with the VUFP Consultation Group at Orr City Hall; 11 members attended the meeting. The Group and NPS discussed representation in the group, commercial floatplanes, day use and fees, check-in system, unlicensed houseboats, and interior lakes. |
| October 21, 1999 | VUFP Consultation Group meeting at the Rainy Lake Visitor Center; 14 members attended the meeting. The Group and NPS discussed natural resource management in the park as well as carrying capacity and measuring indicators and standards for resources and visitor experience. |

466

| | |
|---|---|
| November 18, 1999 | VUFP Consultation Group meeting at the Rainy Lake Visitor Center; 19 members attended the meeting. The Group and NPS discussed park concessions, visitor centers, interpretation and visitor services, and visitor safety. |
| December 16, 1999 | VUFP Consultation Group meeting at the Orr City Hall; 13 members attended. The Group and NPS discussed trails, cultural resources, and promotion and marketing. |
| February 4, 2000 | VUFP Consultation Group meeting at the Orr City Hall; 31 members and guest attended the meeting. The Group and NPS discussed the draft VUFP plan and suggested changes. |
| August 8, 2000 | VUFP Consultation Group meeting at the Orr American Legion; 18 members attended. The Group and NPS discussed the Draft General Management Plan/Environmental Impact Statement and the Visitor Use and Facilities Plan. |

463

## [illegible] QUESTIONNAIRE RESPONSES

[illegible] the Visitor Use and Facilities Plan Ad Hoc Commission Group filled out a [illegible] about visitor uses and facilities inside and outside the park. A summary of the responses [illegible] along with other public comments, were used during the development of [illegible] management alternatives.

**Question #[illegible]**
***What makes Voyageurs National Park special to you?***

Respondents concluded that Voyageurs National Park is special because of its beautiful scenery, wildlife, history, and multi-use recreational opportunities. The park is a unique place for boat trips and snowmobiling, especially because of its large undeveloped shorelines. Although there are restrictions in the park, its facilities and uses are quite accessible. Despite the variety of uses in the park, there are places where one can find solitude.

Other special features of the park include "the fact that it is in my backyard," the ability to take trips without portages, clean water and campsites, the sights and sounds of visitors enjoying the outdoors, a variety of things to see and do, high safety factor, and the fact that the park in addition to the Boundary Waters Canoe Area and Quetico Provincial Park protects a wildland corridor.

**Question #[illegible]**
***Are there any additional visitor use opportunities you would like to see in the park? Are there any visitor uses you think should be changed or limited?***

Respondents stated that most of the current uses in the park need additional facilities to increase visitor opportunities; for example, more campsites, trails, and historic areas to visit. The responses to question six outline these proposed facility needs.

One recommended the promotion of lesser-known visitor use opportunities such as winter camping, snowshoeing, interpretive walks, year-round theme events, overnight Voyageurs trips, land-based interpretive programs, and accessible programs.

A need was identified for increasing ways for people without boats to visit the park. Not only was the issue about people not having a boat, but not being able to afford the current rental rates or tour boat rates in order to use the park. Opportunities for inner city youth to visit the park through scholarships or youth programs was recommended.

Wheelchairs need to be obvious and readily available at the visitor centers for those users who need them.

Open closed bays in winter. The wolf was ok before the bays were closed. The wolf will outlast the NPS and snowmobile public.

Many made a general recommendation for a campsite reservation system whereas others did not feel that reservations were necessary. The enforcement of group size limits is needed to ensure visitor safety and protection of the resource. One recommended going very slowly on limiting use, but one recognized that limiting lake use might have to occur someday to maintain the character of the park.

As visitor use increases, establish or continue monitoring all campsites (SC, LC, HB), and close sites for restoration as the monitoring indicates is necessary.

Although most did not want any current uses eliminated, one wanted motors removed from the [illegible]. [illegible] wanted all bays open to snowmobiling.

[illegible] are not compatible with Voyageurs' mission, purpose, and [illegible] in the park. These included opening Kettle Falls back into [illegible] trips for passengers to circle perimeter of park; national [illegible] and hunting.

**Question #3**
*What additional visitor use opportunities would you like to see outside the park?*

Respondents said that the International Falls and Rainy Lake area need more tent camping opportunities. Public campgrounds with shower facilities and sites for recreational vehicles. Campgrounds should maintain the character of camping and not put sites close to each other. Build a developed and dedicated Crane Lake Visitor Center by partnering with community and US Forest Service.

Visitor use opportunities identified for outside the park include museums or exhibits that focus on area history such as logging, fur trade, Native Americans, etc.; high class tourist attractions; package tours featuring the natural and cultural history of the area; community and park coordinated cultural and natural history seminars; continued outreach to area school districts; natural history multi-day, camp-like programs for older school children; a boat trip that begins in International Falls; dragstrip; ATV park; Upper Midwest Nascar Track; motocross track; winter racing; and rifle and pistol ranges.

Bike, boat, and canoe rentals would offer a variety of visitor use opportunities.

Through development, communities could provide a broader range of recreational and visitor use options beyond hunting and fishing (i.e., cross-country skiing, hiking, birding, flowers, etc.).

Develop more trails outside the park; for example, horseback riding trails, and hiking and cross-country ski trails that connect private property, state, and park lands.

Capture the Canadian bound tourist for a side-trip into the park – offer mini, half-day tours with a shuttle at the Chamber of Commerce building or a place that offers safe parking.

**Question #4**
*When you visit the park what facilities do you use?*

Some respondents do not use any park facilities whereas others said they use all park facilities.

Everything! Boat ramp, Rainy Lake VC, dock, parking lot, Kettle Falls Hotel, day use sites, campsites, docks at various places, canoe camps, portage trails, picnic areas, visitor centers, nature trails, snowmobile trails, hiking trails, ice road, historic sites, navigational buoys, Lake States Interpretive Association bookstores, trailer parking, and Little American Island gold mine.

One appreciates the "top of the line" restrooms – they're always clean. The visitor centers are well maintained, offer displays and programs of interest. Grounds at all the launch sites are also well maintained and attractive, and easy to use.

**Question #5**
*If you provide visitor services, what facilities do your guests or clients use when they visit the park?*

Clients and guests use historic sites, portages, visitor docks, Visitor Centers, resort and restaurant at Kettle Falls, snowmobile trails, and cross-country ski trails, hiking trails, boat ramp, Rainy Lake VC, dock, parking lot, campsites (primarily for day use), Kettle Falls Hotel, day use sites, campsites, docks at various places, convenience store, gas sales, trailer parking, and Little American Island (gold tour).

**Question #6**
*What additional visitor facilities would you like to see in the park? Are there any facilities you think should be eliminated?*

Overall, respondents stated a need for additional campsites (lakeshore and remote, especially on Rainy Lake), houseboat sites, day use sites, historic sites to visit, hiking trails, ski trails, ice roads, park field staff, and interpretive programs. One requested bear lockers at all campsites.

In the areas of camping, suggestions were made for adding non-motorized campsites, rustic campsites (fire ring, privy, and, if needed, bear pole for a more "wilderness-like" experience), and [illegible] for tents and RV's. There was a general concern to maintain the primitive [illegible] that the park currently offers.

[illegible] suggested overnight cabin rentals other than Kettle Falls. These cabins would [illegible] serve, past visitors who do not have camping experience or can no longer camp. [illegible] a need for cross-country skiing cabins.

For day use, one recommended picnic grounds with shelters; these areas could be used for [illegible] and education programs as well. Respondents want more island attractions like Ellsworth Rock Garden and historic sites.

Respondents identified a need for canoe and kayak friendly launch sites at the visitor centers. Non-motorized launches would bring more visitors in who might otherwise start their trip outside the park.

Although it is currently on private land and unavailable, one suggested a dock at East Kempton Channel to access the bear slide.

Many stated that more hiking and cross-country ski trails are needed in the park. Specifically, they want trails on Rainy Lake, near Crane Lake, and across the Kabetogama Peninsula, as well as lakeside trails at the Kabetogama Visitor Center and connecting Rainy Lake Visitor Center to Tilson Creek Ski trails. They want trails that would complement boat trips.

Some respondents identified issues and needs concerning access to the park: a motorized portage from Black Bay to Kabetogama Lake; inexpensive canoe and kayak rentals at the visitor centers for day use only; promote bus tour routes and scenic overlooks; "canoe corridors" on the big lakes; and water-skiing zones.

Most stated a general request for more exhibits and interpretive programs whereas others were more specific: an exhibit acknowledging those residents who "gave up" their land and cabins when the park was established; bear or similar exhibit center (presumably with live animals); exhibits that can be changed to cover the native American culture, wildlife, research projects, early settlers, logging, and commercial fishing; and seminars based at the visitor centers in cooperation with surrounding communities.

Many said that no facilities should be eliminated because they are all well-used.

Some visitor facility recommendations are not compatible with Voyageurs' mission, purpose, and significance statements or are not permitted in the park. These include a rifle range, grandstands, spectator parking, national quality hydroplane racing, and marinas to support the racing.

**Question #7**

***What additional visitor facilities would you like to see outside the park?***

Similar to inside the park, respondents said that visitors need campsites outside the park. Modern campgrounds with facilities as well as tent camping facilities are needed, especially closer to International Falls. (The city of International Falls is currently working with Koochiching County to [illegible] just outside [illegible]. Voyageurs National Park should [illegible] this development [illegible] by tent campers.)

[illegible] the need for picnic grounds immediately adjacent to the park.

[illegible] a number of comments about visitor centers. A visitor center is needed at Crane Lake. A visitor center, like the one at Orr, to greet people as they enter International Falls, [illegible] the entryway to Voyageurs National Park. One suggested moving the [illegible] the entryway into International Falls.

[illegible] International Falls as a gateway community to the park by placing [illegible] at the west entry into town. A sign could be placed on the [illegible] saying "Welcome to Voyageurs National Park."

[illegible] of a youth hostel, or maybe a cooperative agreement with [illegible] a special weekend or week for youth to come and [illegible]

Community development, such as a waterfront park developed along the river at International Falls, conference center, indoor recreational facility, or fairgrounds, would encourage activity and draw more people to the area.

Many felt that businesses should be encouraged to develop and improve existing facilities to meet today's travelers needs. More year round resort facilities would increase activities and visitation. Grants for development consultations may assist with improvements.

One recommended transportation shuttles for tourists to get from local motels and the airport to the visitor centers.

**Question #8**
*Are there additional informational materials you would like to see provided by the park?*

Respondents suggested a number of specific informational materials for production by the park:
species checklists – general wildlife, plants, trees, fish
osprey brochure
natural and cultural resources brochure that is put next to park map and newspaper
Leave No Trace and low impact camping materials (brochure, video)
expectations/awareness information – bring firewood, managing groups
An overall map showing all types of trails and points of interest. More literature on places to go in the park to see things (like on the snowmobile map).

Respondents commented that current park maps need better navigation information.

A map that doesn't cut off the road to International Falls. The current map makes International Falls look farther away than it is from Ash River. Perhaps literature should be re-evaluated to see if it is inadvertently promoting the over-usage of some areas in the park. The park has done a wonderful job with existing publications.

**Question #9**
*Are there additional informational materials you would like to see provided by communities surrounding the park?*

Most of the informational materials suggested focused on promotion of the park. Information kiosks in high traffic areas such as the International Mall or Boise Cascade. A one page handout advertising things to see and do in the park.

Businesses in general, were identified as places where the lake maps could be hung on the walls and brochure racks could promote other businesses.

A local cable TV tourism information channel would promote park activities as well as events in surrounding communities.

One coordinated guide for the entire area. Communities outside the park need to be reminded to include Voyageurs National Park in their marketing materials.

A Canadian regulations brochure addressing water usage, camping, etc. and a brochure on Fortune Bay.

Some respondents said no additional materials were needed; they [surrounding communities] do a very good job.

**Question #10**
*What facilities in your community do park visitors use?*

Park visitors use the following facilities in surrounding communities: restaurants, bars, campgrounds, motels, hotels, resorts, lodges, Bed & Breakfasts, boat launch ramps, outfitters, fish guides, winter guides, snowmobile rentals, boat rentals, museums, golf course, paper mill tours, grocery and liquor stores, gift shops, Grand Mound History Center, airport, parking, marine services, gas stations, kiosks

[illegible] VNP, [illegible]
[illegible] of [illegible], and [illegible]

[illegible] community working with the park to accomplish the goals of the visitor [illegible]

[illegible] communication and respect are key to making successful partnerships with [illegible]. A high priority for the park should be public relations. Keeping the public [illegible] activities and decisions would ease the skepticism of the park and increase potential [illegible]

The presence of a Visitor Center at Crane Lake and the personnel or staff of the VNP is our [illegible]. The NPS lost a lot of community and park participation when the Crane Lake Ranger Station [illegible] position was replaced.

Communities can provide assistance with planning park visits and services to support park visitors. All areas of the park need to be involved in the planning process.

The dream is that the community recognizes the integration that exists between the local economy and the park, believes in the importance of having a unique place in their "own backyard" protected so that people from all over the world can visit, recognizes the high quality of the park facilities and begins to see opportunities for coordinating activities that make use of those facilities – such as community wide reunions, celebrations, etc.

**Question #11**
***Have you had any experiences that made you think there are too many visitors using the park? If yes, please describe.***

Most respondents have not had experiences that made them think there are too many visitors using the park. Some feel visitation is just right, while others feel it is too low. Situations that indicate otherwise were difficulty in finding campsites, both tent and houseboat, especially on holiday weekends. One felt that [illegible] to require permits to regulate visitor use.

**Question #12**
***[illegible] need to be managed differently than they currently are? If so, why and how?***

[illegible] feel that some sort of permit or reservation system is needed for the management of [illegible]. [illegible] suggested a reservation system as a means of educating visitors about Leave No Trace [illegible] handle on use of campsites. A reservation system would allow visitor [illegible] to open campsites and eliminate "phantom" campers who hold sites with [illegible] will leave the site in the future.

[illegible] permits for day use should be initiated. This should help to get a handle on [illegible] use more specifically the use of facilities, not necessarily park use.

[illegible] Leave No Trace (LNT) training to group leaders prior to their [illegible]

[illegible] need to be managed differently and should be left alone.

## 1.1.6. SUMMARY OF VISITOR USE AND FACILITIES PLAN MEETING NOTES

The following lists contain summarized comments made during meetings. For more detailed meeting notes or for an explanation of comments below please call the park at 218/283-9821.

**May 1, 1999**
**Additional Suggested In-Park Facilities and Uses**

- observation tower in park to get an overall view
- set-aside campsites that can be reserved in advance
- more Native American interpretation
- park developed as multi-use park
- allow commercial floatplane use at Kabetogama Lake
- require visitors to camp at designated sites only
- ensure plans are a "living document" and not hard/fast mandates
- market camping opportunities in the park
- seaplane "fly-in" at Kettle Falls; park service employees talk to pilots; chance to educate pilots
- observing park from the air is an important way to see the park
- need to preserve areas to seek quiet and solitude
- more interpretive trails and signs; need more facilities inside the park – trails, campsites, etc. - to draw visitors in
- separate non-motorized boat launch; create areas for non-motorized users to launch vessels
- enhance non-motorized use, but maintain motorized use at the same time
- expand uses in the park and create more opportunities
- expand interpretation of history of the area – commercial fishing, logging, etc.
- more diverse opportunities for park tours (less restrictive)
- more comprehensive cross-country ski trail system
- need a better method to count visitors
- need to define target numbers for visitation; need numbers to define success
- develop mechanisms to level out use; spread it throughout the seasons
- need more day-use sites – 30 on Rainy and Namakan basins; provide a dock, picnic table, & grill
- more support from NPS for local businesses; NPS help to develop new businesses
- national fishing tournament
- maintain historical, cultural activities/uses in the park – snowmobiling, airplane use
- don't restrict motorized use for the sake of non-motorized use
- Route portage – both seasons, save Chain of Lakes access; and as winter road for Kabetogama and other communities
- multi-day hikes – camping with drop-off at trailhead
- use boat to haul canoe/kayak anywhere on 4 major lakes
- snowcoach use and snowmobile in some areas

**Additional Suggested Outside the Park Facilities and Uses**

- each community make a brochure stating what is available to do in each area, especially for rainy day activities
- ATV trail from Ely to Crane Lake to Ash River to Kabetogama to International Falls
- promote more motorized use
- golf course at Kabetogama
- visitor center at Crane Lake
- would like to see more outfitting outside the park

- [illegible] outside the park to open up area for more use
- [illegible] Center in International Falls
- [illegible] Highway 53 travel corridor
- [illegible] trails

**[illegible]**

**[illegible] like to find? (visitor experience)**

- [illegible] camp in the park; need some overnight sites for aircraft
- [illegible] more than 25
- [illegible] than now but not 400
- new sites ok, but remove sites that are overused and need to rehabilitate
- less restriction and least restrictive
- "[illegible]" [illegible] versus build out to 400 in plan
- [illegible] visitor surveys
- consider time of year
- consider [illegible] managed growth to meet preferences – do visitors want day use sites or overnight sites?
- "traditional" voyageurs site is more primitive than current sites with docks and picnic tables
- visitors need to be educated to appreciate and protect the resources (permit system or reservations)
- less conflicts between user groups as sites are developed and they are required to use them

**Developed Sites**

- plan calls for 400, but development is over time and sites are monitored for use and impacts
- group sites – yes?, no?, some? – develop some group sites, but require a reservation so they can't go to an undeveloped site; possibly on edge or outside; 30–40 for a group size limit
- docks – needed? have some traditional sites, less facilities and development
- site development is limited by:
- social factors (visitor experience)
- maintenance – cost
- impacts on environment
- use only developed sites for overnight? – this topic was tabled until the discussion on reservations
- provide for vessel and private houseboats for holding tanks; decals would indicate that the vessel has an approved holding tank system
- [illegible] information from mediation process – provide group with this information
- visitor destinations, if appropriate, can have day use facilities in addition to means for destination (e.g. Ellsworth Rock Gardens)

**Development Outside the park**

- [illegible] County is developing campsites in Black Bay

**[illegible]**

**[illegible] Areas**

- [illegible] in [illegible]; not needed here, except in developed areas
- [illegible] houseboats/canoeists in narrows/islands where wake deters experience;
[illegible] it's been that way for years
- [illegible] or visitor conflicts?
- [illegible] by the physical nature, are slow areas
- [illegible] are no-wake areas enforceable?, some high traffic
- [illegible] and operation and location

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[illegible]

474

- education – brochures, etc. about courtesy and safety
- not a problem; don't make it an issue
- few complaints; educate visitors about different uses
- people can find solitude
- make both parties aware of each other and co-exist
- no-wake zones may cause more conflicts
- canoes are different than kayakers; provide education about all uses

*User Fees*

- boats on interior lakes (BOIL) – reservation doesn't equal use; boats go unused; also the canoes are abused.
- should be a charge for backcountry use, campsites and BOIL.
- we get a lot here for free, not adverse to an annual sticker fee, boat launch fee, camping reservation fee; needs to be creative to make it work.
- fee ok if used judiciously, money comes back to park and it's reasonable
- administratively difficult, but fees ok, particularly camping; user fees too difficult to implement
- where does money go at other parks?
- sticker on boat would work as entrance fee
- fees are not a substitute for Congressional appropriations
- there are creative ways to collect like remote border crossing permit
- no support for fees; reasons misguided; not economically feasible; not fair to locals; too many negative results if implemented
- administratively too expensive; do a voluntary permit
- no fee for just fishing; administrative problem; facility use fee ok
- use technology – Internet, phone; use fee money for maintenance
- fees ok; Voyageurs is not unique relative to multiple access points; Boundary Waters has many entry points and a fee and reservation system; use feasibility study to explore how it could work
- what could Voyageurs do with extra money; if people could see and know where money goes for
- money for camping goes back to camping; will fee change character of park; will it make people escape to Ontario waters
- all state parks have fees; there is ample creativity to make it work
- how can the park maintain services without fees; make users pay for costs; inevitable; get creative
- water use fee – no; facility use fee – ok
- plan for it now, inevitable. A fact of life for user fee – will be beneficial to park and users
- [cost of collecting fees for] boats on interior lakes may be prohibitive – too small of a program. Other services (emergency assistance, towing, etc on the water) are tied with fees, not just facilities
- would rather have this group review how to implement, than have it forced upon.

*Overnight Permit/Reservation System*

- have to have some sites with reservations and some without; good idea for some campsites to be reserved, but not all
- sites with reservation should have a higher fee than first-come, first-served sites; first-come, first-served sites have a smaller fee or no fee
- fees raised here should stay here
- large groups; organized group benefit from reserved sites and it protects the resource
- first reserve large campsites for groups up to 30; large groups may need rules; require use of developed sites
- needed seasonally not year-round
- what conditions [illegible] allow someone to get up a reserved site

[illegible] and there is availability
[illegible] the site you reserved; don't give anything from a time
[illegible]

- [illegible] on a map first-come, first-served and reserved sites as well as post the [illegible]
- [illegible] too much therefore site specific reservations would not work; no [illegible]
- [illegible] of use – motorized or non-motorized
- [illegible] visitors reserve a zone where sites are located; need to report zone; reservation is not site specific
- on busy days, reserved and first-come, first-served sites will all be full and there will still be a problem
- move incrementally into a system; holiday weekends are the busy time right now; a percentage of reserved and first-come, first-served; percentages could change over time
- use of undeveloped sites with a permit should be allowed; permits would regulate use of undeveloped sites
- have to spread out use to developed sites; can't meet everyone's desired spot every day
- free permits – would be a good management tool; would give visitor information; although free to the visitor it costs the park money
- raising funds is admirable, but decisions should be about what is best for the visitor
- what is the goal of a system?; look at effects on visitors and park operations
- needs to be looked at in detail; maybe establish working sub-groups
- system needs to be as simple as possible because of all the different agency regulations to know about; especially at Crane Lake
- there could be designated primitive sites; no or few facilities; these sites could have different rules for use; accommodates people who want a very primitive experience

*Lakecountry and Backcountry Camping*

- backcountry camping could be promoted more
- eventually campers should be required to use developed sites, but not until site plan is developed; [illegible] need for sites
- could [illegible] different zones of use; in popular areas require use of developed sites, in less popular areas allow use of undeveloped sites
- [illegible] site and sound issues; keeps people spread out
- [illegible] have and not the resource
- [illegible] sites and are looking at developed sites
- if you have developed sites, require use of them; it's harder to require if you don't have developed sites
- [illegible] primitive sites (undeveloped or few facilities) for use
- [illegible] at which it is full and we need a system so people and the park know when it is full

[illegible]

- [illegible] out there – grandfather them in
- [illegible]
- [illegible]
- [illegible] houseboat trips
- [illegible] of sites tied up by [illegible] and temporary [illegible]
- [illegible] environmental [illegible]
- [illegible] capacity study to evaluate levels

**September 28, 1999**

*Commercial Floatplanes*

- history prior to interim regulations?
- in general an activity is prohibited in the park unless permitted
- eventually regulations were written for other uses
- floatplanes didn't have set regulations
- an emergency rule was placed in effect for where private floatplanes could land
- an existing permit to fly visitors to Shoepack was honored
- don't have an overarching regulation for commercial use
- Lake Kabetogama doesn't have access because water is in the park
- from May 28 to date, David Dill said that he has flown 239 flights for scenic tours
- Kabetogama should be serviced and not just at one place, they want pickup at their own docks
- need access to entire developed shoreline on Kabetogama
- few flights from Ash River because Sullivan Bay is hard to use and is a safety issue
- concerned that no place on Rainy is being discussed for commercial floatplanes to use for pickup
- Kettle Falls and 2–3 places on Rainy Lake should be designated
- an airplane adds to the Northwoods mystique
- park should work to preserve cultural and traditional use like floatplanes
- some flexibility would be good – Rainy Lake
- what is the noise difference between private and commercial planes? David said the noise is the same because the planes are the same or similar
- FAR135 – meet regulations for a commercial license (air taxi certificate); these are higher standards
- a concession would give protection to the person providing the plane service; this would include certain regulations that the pilot and plane need to meet
- theoretically could make rules for use – number of flights and hours of operation
- where one stays around the park has certain expectations; Crane Lake is very noisy
- not everyone comes to the park to hear noise like floatplanes
- one site on Kabetogama is reasonable
- people would most likely travel to one pick-up spot
- there has never been a survey of Kabetogama residents about floatplanes
- necessary to keep it [this discussion] on a personal level [not as a representative of the community]
- planes would threaten the solitude of the area; the area is already very used
- we are guessing until something official is done like a survey
- on Rainy Lake – houseboat guests want to fly when they are on the lake, not before or after their trip
- 135 certificate costs $7,000–8,000 a year – insurance, certificates, can have a certificate for one or many pilots, but it costs more; would keep things in check
- limited places for pick-up that are advertised and people know where they go
- location of park is off the beaten path
- visitor experience must be considered; why do people come to the park?
- Kabetogama Community Club needs to be asked about floatplanes; some chose Kabetogama over Crane Lake because of the noise
- continuing dialogue about what is happening in the park is very important
- David, not advocating floatplanes in noise sensitive areas
- noise would be dispersed if it is at many airports rather than one place
- clarify – can tour boats pick people up anywhere and drop them off anywhere? this would be a water-taxi service, can't interfere with tour boat service
- [pilot's license] Part 91 doesn't equal less experience
- NPS may require 135 certificate because of liability

- (NOTE: The FAA is responsible for certifying pilots. The NPS can require a certain type of insurance and liability insurance and it can regulate flights and landing areas.)

*Day Use*

- some of the river beaches could be day use, then everyone can use them; convert some current overnight sites with beaches to day use
- need to make early lunch day use sites better known; highlight what it means (i.e. 2 different groups can use one day use sites)
- overnight sites are being used for shorelunch which conflicts with campers
- need more day use sites for shorelunch use
- question to group: are guides using campstoves more?
- prefer open fire; most guides bring their own wood; saves time to bring own wood and it also protects the park
- it would be nice to have grease pits at the site
- need to address what guides can do with grease from shorelunch
- what to do about people who "save" sites with a tent? ; it's an enforcement issue
- possible to identify traditional, but undeveloped sites for use?
- why not make some sites permit or reservation so they can have a site and not have to stake it out with a tent
- day use anywhere without fires is ok; not everyone agrees
- an established rock ring is hard to argue if it's there; nearly impossible to determine if it was just built
- locking out opportunities for visitors if they can't have a fire anywhere for day use
- consider a check-in, check-out system; not a reservation system but a way to educate them
- park needs to have some management flexibility; different requirements for different sites
- plan needs to have prescriptions for what will happen when certain conditions are reached
- we have a wide range of visitors and we need a way to contact people
- a check-in, checkout system would be a great safety benefit but locals would be resentful; the system would need to accommodate frequent users; there were sign-in sheets at Boise campsites
- need an education system or means of contacting visitors; doesn't mean everyone has to go through a visitor center; need to teach people about how to camp
- survival bag full of information to give to visitors
- pre-trip information would be valuable; or web site possibility

*Houseboats – trailerable*

- what is the definition?
- what about Cutty Cabins? how are they treated?
- they should be required to use houseboat sites
- the boat's facilities should dictate what sites they can use
- not a problem now, but it could be
- need methods to address potential problems; don't want to wait for a problem
- the plan needs to be able to define methods to deal with future issues that may not be a big issue right now
- need to look at permits for overnight; not necessarily day use
- need to look at all groups equally; don't single out one group
- trailerable houseboats may be more of a problem than private houseboats in the future
- there is a visual impact associated with an increase in houseboat numbers
- having visitors sign-in will give us the information we need for numbers
- consider a different type of site for boats with overnight facilities, but no head

478

*Interior Lakes*

- keep status quo on interior lakes
- making interior lakes non-motorized would provide a desired use and would expand opportunities in the park

**October 21, 1999**

- carrying capacity and monitoring visitor experience and resource protection presentation
- discussed the protection of the park's natural resources

**November 16, 1999**

*Concession:*

- Boats On Interior Lakes
  - a concession would make it easier on park finances, more difficult to control, is it [economically] feasible?
  - boats are reserved, but not used
  - paddles could be carried in [to prevent vandalism and theft]
- [there is a] perception that Mukooda boat rentals are not available to anyone but the operators' guests
- resorts can give rides to trails
- need individual business permit for most services provided in park, requirements vary, $75/2 years
- majority of businesses are not using incidental business permits
- Firewood Sales – use private sector to fulfill need
- expand tour boats to Crane Lake
- Falls' CVB supports expansion of boat tours; operations expanded to fleet; big and small boats
- tour boats need to work with Canada to use their waters; few restrictions unless you stop on Canadian land
- regulation may be prohibitive
- [expansion is] limited by money and qualified captains
- currently the Crane Lake area is under the Kabetogama [Namakan Basin] concession contract, may be restraining opportunities for growth
- NPS concession regulations are being revised
- need naturalist on board
- use smaller boats
- 3 areas of origin – Rainy, Kabetogama and Crane Lake
- business' economic climate
- resort owners and business need to promote the tour boats concession
- tours make for happy customers
- resort community support includes paying for brochures and Rendezvous newspaper
- Winter Concessions; would like a snowcoach; could drop off skiers and do sight seeing; would need a feasibility study; sled dogs and winter camping IBP

*Visitor Centers*

- make Boats on Interior Lakes available after September 30 [when visitor centers close]; set up a system
- bulletin board messages for fall and spring and tour boats
- multi-agency visitor center at Crane Lake
- virtual visitor centers – 174,000 hits on internet
- [consider staying] open later on holiday weekends
- tour boat guests need to have access to an open visitor center after programs

- [illegible], increased zoning
- [illegible] for fishing
- [illegible]

[illegible]

- [illegible] – voyageur's need to be considered
- [illegible] of sites (through other media) where they can't develop site for public access
- [illegible] stories; providing stories of voyageurs life
- [illegible] past and life
- more [illegible] of sites – regional destination, international, complementary
- and [illegible]
- forest history, logging
- settlement and development interpretation
- Native Americans – trails and camps
- flow of traffic, the waterways
- park would map safe scenic routes for paddlers
- establish canoe and kayak sites

*Visitor Safety*

- national parks are most heavily preserved and protected of public lands; need enforcement to preserve
- protection and coordinate with other agencies
- respond to emergencies – medical, safety, fire, etc.; depend on first responders
- [illegible] ambulance now
- as a camper, Voyageurs is quasi-wilderness with a sense of help, need a little more presence
- Channel 16 [would use a] greater response [from rangers]
- in 14 years, saw 1st ranger this summer, like it the way it is
- is there a ratio of ranger to visitors? [no set ratio]
- visitors see all staff as "rangers" so contact with visitors goes beyond rangers
- cooperative arrangements are helping coverage
- may change as visitation increases
- site specific reservations will increase conflicts
- depends on all this – cover by cooperation
- staffing is good, contact is important
- how is [illegible] to be a ranger?
- people (canoers and houseboaters) are more sophisticated; able to take care of own needs
- the nature of park – with water and boats demands highly visible staff
- [illegible] part of everybody's job
- [illegible] rangers [illegible]
- [illegible] badge gives impression of enforcement and may put people in harms way
- [illegible] [visitors]
- a lot of people don't want to see rangers
- [illegible]
- [illegible], safety, and resource violations because of a lack of staffing
- [illegible] you need 7 days, 24 hours per day, check shifts [rangers aren't saying that [illegible] coverage]
- [illegible] visitor safety
- [illegible] – Rainy Lake different than Namakan
- [illegible] where highest incidents are and put resources there

**November 16, 1999**

*Trails (existing conditions were stated)*

- increase ski trails
- maintain or increase snowmobile trails
- hiking trails – need more connectivity
- trail literature meets need
- ski trails have a good diversity of skill level
- need hiking trail from Kettle Falls to Mica Bay
- trails in Alternative 3 are supported by International Falls Area CVB
- expand trail access on west end of Rainy Lake

*Cultural Resources (existing conditions were stated)*

- visitor destinations to cultural resources – provide without destroying resource
- interactivity or experience with cultural resources important to visitors
- cultural resources are important to visitors
- support for alternative 2

*Promotion & Marketing*

- Tim Campbell, Minnesota Office of Tourism, presented information on current trends
- Shawn Mason, International Falls Area Convention & Visitors Bureau, presented information and details of their action plan
- Crane Lake, Kabetogama, and Ash River are doing similar marketing, but they have smaller budgets [than International Falls]
- tourism operators have to deal with the attitude, "This is my backyard and I don't want to share it"
- utilize Voyageurs National Park in brochures and media
- need to determine how best to link communities to the park and entrepreneurial opportunities
- Blandin Community Foundation Project: looking at 1. economic development, 2. telecommunications, and 3. a multi-generation cultural facility
- sense of occupancy – higher use of Rainy Lake; much lower for hotels and motels in International Falls
- negative headlines recognized as an impairment by visitor and convention bureaus and chambers
- marketing – must function within a limited budget
- Minnesota Office of Tourism is doing "customer profiles" – who, what to do, and how come to be here
- trends – larger diverse populations; aging baby boomers; shoulder season & group tours
- pursue a larger, regional identity: Canadian – Lac La Croix, Manitou Mounds, Provincial Parks – Sleeping Giant, Kakabeka, Quetico, LaVerendrye, Atikokan – we have a common interest in marketing; we also have common themes
- no additional [State operated] travel information centers are needed
- Gateways Group – need to keep looking for opportunities to continue to work together – this is a long range process
- park staff should go to meetings beyond when there is an "issue"
- VUFP plan must be reflective of group discussions

## [illegible] OF TOURISM AND MARKETING INITIATIVES

[illegible] for Tourism in Voyageurs National Park Area from a Spring 1982 Meeting [illegible]

| [illegible] | ACTIONS TAKEN (since 1982) |
|---|---|
| Advertise VNP sign at state rest areas (Info-Stop Program) | • Display at International Falls & Anchor Lake Travel Information Center<br>• Explore Minnesota Store in the Mall of America<br>• *Send out 30,000 Park Rendezvous newspapers and other park information to Travel Information Centers*<br>• *Travel Counselor Institute – training for information center staff* |
| Establish appropriate signing along access roads | • 1985 – Voyageur Highway Logo added to signs<br>• Advance Destination Sign (on highways) for Voyageurs National Park – big brown signs<br>• Woodenfrog State Forest campground and Park signs – to coordinate signs in the Kabetogama area State and Voyageurs have partnered for signs that list Woodenfrog and the park<br>• planned entrance sign at Kabetogama Lake area |
| Publication of objective and accurate articles in newspapers and magazines | • Daily Journal Special Edition<br>• Sea Kayaker magazine<br>• 78 articles in 1998 – park reviews for accuracy, provide information and pictures<br>• *Convention and Visitors Bureaus and Associations*<br>• *Houseboat Magazine, Reader's Digest*<br>• *Chamber of Commerce – Motorhome magazine*<br>• *many other magazines* |
| Establish information center in International Falls Area (South of international crossing) | • this is the International Falls Travel Information Center – $10,000 Voyageurs National Park – funded Display<br>• working on *rehabilitation of Travel Information center exhibit* |
| Encourage NPS participation at visitor centers in Orr and/or Cook Area | • Orr Information Center opened in 1989 – Voyageurs National Park contributes the most money to the Orr Information Center of all the partners<br>• Other partners in the Orr area include Pelican Lake, Orr Chamber, and Crane Lake *and International Falls* |
| Establish NPS leasing authority for visitor facilities at Orr and Crane Lake | • Orr Information Center — memorandum of understanding with Voyageurs National Park<br>• NPS leases a house in Crane Lake that serves as a Ranger Station; limited visitor information is available |

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| ACTION RECOMMENDED | ACTIONS TAKEN (since 1980) |
|---|---|
| Obtain funding for visitor facilities in Kabetogama/Ash River Area | • Heritage Signs – *Northern Lights Tourism Alliance*<br>• proposed Kabetogama-Ash River trail<br>• snowmobile trails<br>• new snowshoe and cross-country ski trails<br>• Kabetogama bike trail – *communities have pursued this for visitors to their area*<br>• NPS – 1 road *(Meadwood Road to Ash River Visitor Center)*<br>• *increase in winter opportunities has been a very cooperative effort* |
| Obtain funds for interpretive facilities at Black Bay Narrows | • Rainy Lake Visitor Center opened in 1987 |
| Expedite improvements for VNP access roads | • Rainy Lake VC entrance road – 1988<br>• Highway 11 bike trail<br>• Ash River Visitor Center entrance road – 1996<br>• Ash River Trail road – paved 1995<br>• Crane Lake Road improvements – early 80's |
| Obtain special assistance from state for promotion of VNP area | • Minnesota Office of Tourism with Gateways – *Gateways is the group of four gateway communities working to promote the park together*<br>• Travel Counselors *Institute – people who work at the Travel Information Centers are trained every year through this program*<br>• Explore Minnesota Store – *in the Mall of America – 80,000 brochures*<br>• State Fair 1997 & 1998 – *park staffed a booth within the Minnesota Office of Tourism area*<br>• Berron Marketing Report – *1989 – funded by Office of Tourism, Voyageur Country Tourism Coalition, IRRRB – a study to look at tourism trends and what actions were needed*<br>• Arrowhead Association<br>• park photo on state map<br>• *Explore Minnesota newspaper and statewide travel guide* |
| Publish and distribute appropriate visitor information | • Gateway Communities and the park distribute:<br>• Rendezvous – started in 1983 – *print 80,000 copies; distributed at Offices of Tourism, Sport Shows, and through Gateways; purpose is promotion and visitor information for trip planning; they are placed in bear lockers at the campsites within the park*<br>• Snowmobile trail map<br>• Camping maps – *printed 30,000 this year ('98)*<br>• Boating/Canoeing brochure |
| Establish appropriate management goals for VNP use | • 1980 Master Plan<br>• General Management Plan – will be completed by October 2000 |

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| [illegible] | [illegible] |
|---|---|
| [illegible] specific [illegible] | - [illegible] <br>Boundary Tourism and [illegible] National Park – have focused on group tours and park promotion for group tours |
| Identify appropriate areas for commercial use in Voyageurs planning area. | - General Management Plan – will be completed by October 2000 |
| Obtain favorable financing for capital improvements for resorts | - *Minnesota Extension*<br>- *Business Retention & Expansion Program*<br>- *State Trade and Economic Development Program – low interest tourism loan program; this has been used a lot in northern Minnesota; not available to businesses without lodging which is a problem; can be changed through legislation*<br>- *Koochiching County has KoochCo – subsidized loan program*<br>- *IRRRB – Iron Range Resources and Rehabilitation Board (covers St. Louis County)* |
| Establish effective coordinating mechanism for tourism promotion in NE Minnesota | - Minnesota Office of Tourism Northeast Regional Office – established when? *1987*<br>- Minnesota Arrowhead Association<br>- Northern Lights Tourism Alliance<br>- Gateways – gateway community group<br>- *IRRRB – does not cover Koochiching County*<br>- *Voyageurs Country Tourism Coalition – 1984 now is the Voyageurs Trails Society, Inc.*<br>- *each community does own promotion* |

*From: "Tourism Opportunity Analysis for Voyageurs National Park and Environs," September 1983*

| RECOMMENDED ACTIONS | WHAT HAS BEEN DONE? WHAT IS HAPPENING NOW? |
|---|---|
| Area businesses, civic groups, park staff and other affected persons need to continue to work together to establish a single identity (designation) to use in area wide, coordinated marketing programs. | - Marketing Plan for Voyageurs National Park and Resort Area - by G.R. Barron - November 1989<br>- Gateways |
| Compile and distribute widely a list of all special events. Develop new events to increase visitation in slower periods. | - Bird Festival<br>- Lady Slipper Festival<br>- Elderhostel - RRCC (advertise nationally)<br>- Ice Box Days<br>- Paddle Regattas - FOVNP<br>- In the past - Voyageurs Days at Crane Lake<br>- *Heritage Days*<br>- *Regatta in Ranier* |

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| [illegible] | [illegible] |
|---|---|
| Develop at least one annual, [illegible] special event of national significance – for example, Voyageurs Days, wild rice festival. | |
| The Park Service should make an effort to interpret the Native American history of the area including, perhaps, on-going demonstrations of Indian crafts. | • sales items from Bois Forte Tribe in Visitor Center Bookstore<br>• Exhibits and programs - teacher education [illegible]<br>• *LLIA - trying to print [illegible] Tales – Native American Stories and Interviews* |
| Area artists and crafts people should be encouraged to open a gallery and to hold at least one arts/craft institute in or near the park each summer with a nationally known artist providing instruction. | • Artists-in-the-park program: *they have to give the park a piece of their art and they have to do a program for visitors*<br>• Gallery in International Falls<br>• Lady Slipper Festival; *International Falls art group displayed their artwork at the Festival and at the Kabetogama Visitor Center*<br>• art exhibits at Rainy Lake Visitor Center |
| Someone needs to look into the possibility of developing the area as a source of caviar. | • Commercial operation not appropriate in the park<br>• no longer a viable recommendation |
| At least one resort should offer some form of evening entertainment. | *currently offered:*<br>• *piano bar*<br>• *bands*<br>• *jam session at Woody's pub*<br>• *Rainy Lake Lodge – Blues Night on Wednesdays* |
| There is an opportunity to establish winter operations in Voyageurs Country. | • Resorts have been winterized<br>• Snowmobile trail brochure – *started 85-86; Rainier will be highlighted next year*<br>• Kettle Falls Hotel is open during the winter<br>• Snowshoe trails & *snowshoe making classes*<br>• Cross-country ski trails – Tilson Bay, Ash River, Echo Bay, Black Bay<br>• proposed Kabetogama-Ash River trail for cross-country skiing<br>• park trail and snow conditions reports – distributed statewide |
| The Task Force recommended that resorts develop some type of day tour through the park area, perhaps using houseboats. | • NPS concessions boat tours – depart from Rainy Lake Visitor Center and Kabetogama Lake Visitor Center |
| Along with a specific tour boat, a type of mass transit is needed. This could include both boats and vans. | • water taxi service – incidental business permit holders<br>• Voya[illegible] – outside the park shuttle service between resort communities and area attractions<br>• *Greyhound re-established service in June–July 1989; IF to Duluth and Twin Cities*<br>• *reduced airfares & more flights* |

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| [illegible] | WHAT HAS BEEN DONE? WHAT IS HAPPENING NOW? |
|---|---|
| [illegible] | • Information about other sites at the Visitor Centers<br>• International Museum Association brochure and map<br>• Heritage Tourism Trail – NLTA<br>• Voyageurs' interpretive programs |
| [illegible] that full [illegible] developed. A new, [illegible] campground has opened since the Task Force visited the area. | • Sunstown RV campground – out of business; operated *1983-1987*<br>• Woodenfrog – requested funding for full hookups<br>• RV campgrounds in International Falls; away from the water |
| Targeted "fam-tour" (familiarization-tour) programs for travel writers and others in the travel industry should be planned each year. The Minnesota Tourism Division should be encouraged to help in this effort. Resorts and attractions will be expected to provide complimentary accommodations, meals and admissions to travel writers and travel agents. | • IRRRB – fam-tour on group tours<br>• International Falls Convention & Visitors Bureau – fam-tour on group tours<br>• snowmobile<br>• Minnesota Office of Tourism<br>• Governor's Snowmobile Tour<br>• Governor's Fishing Opener |
| Explore group tour and travel package opportunities. Both foreign and domestic markets are important as targets. | • See above<br>• *group tours have increased because of fam-tours* |
| Area resorts and other businesses, working together, must bear primary responsibility for achieving change in the area's market. Specifically focus on:<br>a. Recognize the marketing opportunities afforded by the presence of a national park.<br>b. Increase the range of profitable services offered to customers, including equipment rentals and special programs.<br>c. Improve and expand RV sites and services to RV visitors.<br>d. Increase cooperation among resorts and attractions to augment opportunities for guests. | • Gateways, Chamber of Commerce, Convention & Visitor Bureaus – focus has changed to sell the park first<br>• Outfitters – in all resort communities, watercraft rentals, ice house rentals, hot tubs, Bed and Breakfast<br>• *one participant thought there was a decline in ice house rentals on Kabetogama because of set-up restrictions*<br>• many resorts<br>• *distribute brochures from other businesses at own businesses – "cross-selling"* |

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| RECOMMENDED ACTIONS | [illegible] |
|---|---|
| Additional boat ramps need to be built at key locations. | The following places now have boat ramps:<br>• Rainy Lake Visitor Center<br>• Kabetogama Lake Visitor Center<br>• Ash River Visitor Center<br>• Crane Lake – DNR ramp<br>• Woodenfrog – DNR ramp<br>• DNR ramps along Highway 11 |
| To attract the RV market, facilities must be available. | • Sundown RV park – out of business; reasons heard – *not marketed enough, maintenance was not good; not run properly*<br>• *two RV campgrounds available in International Falls* |
| More short-term powerboat rentals should be made available so that the park is more accessible to non-boat owners. | • rental of all watercraft is up<br>• houseboats, pontoon boats, canoes, and kayaks are available for rent from local outfitters |
| Future tourism promotion efforts should emphasize the variety of activities that are available at Voyageurs. Resorts should provide detailed information to guests. | • Rendezvous park newspaper – lists programs<br>• Daily Journal Visitor Guide<br>• Building Interpretation operations in order to offer consistent programs and hours of operation |
| Develop a central source of lodging/activity information to help first-time visitors. A master brochure on Voyageur Country and a single phone number with up-to-date room availability information. | • Getaways<br>• Orr Information Center – vacancy hotline |
| As funds permit, a central reservation system should be established to book resort directly. Implement a "fishing hotline." | • *Tim Campbell explained at an Orr Information Center meeting how complicated a central reservation system is and why you don't really want one.* |
| The park and local tourism council should build a photo library for publicity purposes. Send press releases to travel, outdoor, and lifestyle editors of newspapers. | • Daily Journal<br>• International Falls Convention & Visitors Bureau<br>• Voyageurs National Park<br>• *Minnesota Office of Tourism*<br>• *Crane Lake*<br>• *park has a list of photographers* |
| The National Park service needs to expand the interpretive program, develop a wide range of content brochures, and develop slides and videotapes for promoting Voyageurs. | • Developed a film in past; developing a new film<br>• Broad interpretive program<br>• Visitor Destinations<br>• 3 types of brochures – *guides, safety, wildlife* |
| Consider developing a separate pamphlet on the wildlife of the area. | • Bird Checklist<br>• Eagles<br>• Need watchable wildlife information<br>• *NPS and USFS working on a wildflower brochure* |

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| [illegible] | [illegible] |
|---|---|
| [illegible] | [illegible] |
| [illegible] | - *CVB's and associations are selling the experience and not just the fishing aspect*<br>- *Family focus is increasing* |
| [illegible] to [illegible] training, [illegible] marketing, [illegible] changing consumer preferences and more. | - Rainy River Community College – hospitality programs<br>- Visitor Centers host hospitality informational open houses<br>- *University of Minnesota extension service has training available*<br>- *Minnesota Resort Association holds training – boot camp for new resort owners*<br>- *Minnesota Inn Association*<br>- *Congress of Minnesota Resorts*<br>- *Minnesota Bed & Breakfast Guild* |
| Seek sources of subsidized loans to facilitate capital improvements, including weatherization. | - *Blandin Foundation is coming to International Falls for the purpose of leading the community through a planning process for seeking sources of funding, organizing meetings, etc.; this is the first group they are offering it to; no charge they just want sincere participation; they will walk the community through examples as training* |
| Seek seed money for area-wide programs, promotional brochures, transportation system improvements and a central visitor information system. | - IRRRB and Gateways<br>- Minnesota Office of Tourism & Gateways – website *and other projects*<br>- MNDOT – widening Highway 53<br>- Local communities and local highways |
| At some future time, it might be desirable for the [illegible] Tourism Council to employ a [illegible] public relations/marketing agency [illegible] to help improve the [illegible] that is [illegible] | - Baron's Marketing Report – 1989<br>- *IRRRB on a regular basis for NLTA has a public relations person who attends their meetings and works with them on a regular basis* |

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## [illegible]

[illegible]

**Visitor Safety and Protection**
Koochiching County Sheriff's Department (MOU), International Falls Fire Department, [illegible] Service (MOU), St. Louis County Sheriff [illegible] Kabetogama Lake Fire Department (MOU), [illegible] (MOU), Crane Lake Fire Department (MOU), St. Mary's Hospital (Life Flight), St. Luke's Hospital (Life Link), Minnesota DNR (MOU), U.S. Border Patrol (MOU), U.S. Coast Guard Auxiliary (MOU), and U.S. Customs Service (MOU)

**Visitor Facilities (mainly work on trails)**
Student Conservation Association, Minnesota Conservation Corps, Youth Conservation Corps, Voyageurs Region National Park Association Volunteers, Kabetogama Lake Association, International Voyageurs snowmobile club, Kabetogama Snowdrifters snowmobile club, and the Crane Lake Voyageurs snowmobile club.

**Tourism Potential**
Local businesses and organizations, Kabetogama Lake Association, Ash River Commercial Club, Crane Lake Visitors Bureau, International Falls Area Chamber of Commerce, International Falls Convention and Visitors Bureau, Voyageur Country Car Area Information Center, Minnesota Office of Tourism, and the Iron Range Rehabilitation and Resources Board's Northern Lights Tourism Alliance.

**Resource Protection and Education**
Lake States Interpretive Association, Rainy River Community College, Vermilion Community College, Hibbing Community College, University of Minnesota Duluth, University of Minnesota St. Paul, Camp Koochiching, [illegible] Foundation, Student Conservation Association, Independent School District 361, Our School District, Fort Frances Ontario School District, Bigfork/Littlefork School District, St. Thomas Catholic School, Park Rapids Christian School, Indus School District, U.S. Forest Service, and Upward Bound, Minnesota Incident Command System (MNICS), Minnesota Department of Natural Resources, Ontario Ministry of Natural Resources (OMNR), Rainy River Community College, Vermilion community College, Falls High School, U.S. Coast Guard, U.S. coast Guard Auxiliary, Minnesota Department of Natural Resources-Enforcement, Koochiching County Sheriff Department, St. Louis County Sheriff Department, Minnesota Department of Natural Resources-Waters Division, Hennepin County Sheriff Departr ent, Minnesota Department of Natural Resources (MDNR), Minnesota Historical Society (MHS), University of Minnesota (UM) School of Forestry, U.S. Department of Agriculture/Soil Conservation Service, Mission Oriented Research Program-Center for Community and Regional Research, Eagle Environmental Incorporated, Michigan State University, Michigan Technological University, Midwest Archeological Center, Minnesota Department of Natural Resources, Minnesota Historical Society, Minnesota Pollution Control Agency, Minnesota State Historical Preservation Office, U.S. Geological Survey Biological Resources Division, Natural Resources Research Institute, Northern Michigan University, University of North Dakota, University of Minnesota, UMD, U. S. Forest Service, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Geological Survey, University of [illegible], Air Resources Specialists, Ontario Ministry of Environment, Voyageurs Region National Park Association, Science Museum of Minnesota, University of California Davis, The Nature Conservancy, Minnesota County Biological Survey, and University of Wisconsin.

## [illegible] — SUGGESTED LIST

[illegible] not necessarily all inclusive.

[illegible] Gateway Communities

[illegible], and Border
- [illegible]
- Koochiching County Historical Museum
- Boise Cascade Paper Mill tours
- Smokey Bear Park
- Rainy River
- Big Fork and Little Fork Rivers
- Black Bay Wildlife Management Area
- Grand Mound History Center
- Lake of the Woods County Museum
- Franz Jevne State Park, Birchdale
- Fort Frances, Canada
- The Fort Frances Museum and Cultural Centre
- Pither's Point Park History Sites, Fort Frances, Canada
- Kay-Nah Chi-Wah-Nung (Manitou Mounds) Historical Centre
- Quetico Provincial Park, Ontario

*Kabetogama, Orr and Crane Lake*
- Vince Shute Bear Sanctuary, Orr
- Boundary Waters Canoe Area Wilderness
- Superior National Forest
- International Wolf Center, Ely

Complementary Attractions in Northern Minnesota and Canada
- Old Fort William (voyageurs era), Thunder Bay
- Ironworld Discovery Center, Chisholm
- Minnesota Museum of Mining, Chisholm
- Forest History Center, Grand Rapids
- Split Rock Lighthouse, Two Harbors
- Soudan Underground Mine State Park, Tower
- Grand Portage National Monument
- Chippewa National Forest
- North Shore State Parks along Lake Superior on Highway 61
- Great Lakes [illegible] Museum, Two Harbors
- [illegible] Pioneer Homestead, Embarrass
- Headwaters of the Mississippi River, near Bemidji

## 1.1.10. REFERENCES AND CONTACTS

*International Falls Convention and Visitors Bureau Action Plan*, February 1999.
Contact: Sharon Mason, Executive Director, 301 Second Avenue, International Falls, MN 56649, 218/283-9400

*Minnesota Office of Tourism*, Contact: Tim Campbell, Northeast Region Manager, Minnesota Office of Tourism, Northeast Regional Office, 320 West 2nd Street, Suite 707, Duluth, MN 55802-1402, 218/723-4692

*Minnesota State Park System Land Study Public Review Draft*, August 19, 1999 by University of Minnesota College of Natural Resources and the Department of Natural Resources Division of Parks and Recreation

*University of Minnesota Extension Service - Tourism Center*, Mr. Dan Erkkila, Associate Director, NC Research/Outreach Center, 1861 East Highway 169, Grand Rapids, MN 55744-3396, 218/327-4361

*Voyageur Country Initiative: A Planning Exercise Conducted in Orr, Minnesota by Community Residents*, Draft #1, March 1999, Contact: David Dill, Economic Development Director, City of Orr, P.O. Box 237, Orr, MN 55771, 218/757-3288

*Voyageurs National Park*, Contact: Planning Coordinator, 3131 Highway 53, International Falls, MN 56649, 218/283-9821

*Voyageurs National Park Visitor Study - Summer 1997*, Report 99, Visitor Services Project, Cooperative Park Studies Unit, University of Idaho. Contact: Margaret Littlejohn, University of Idaho Cooperative Park Studies Unit, 208/885-7863.

*Working Draft Minnesota Water Plan 2000: Rainy Basin Report*, 2000, Minnesota Pollution Control Agency, Contact: Nolan Baratono, Rainy River Basin Coordinator, MPCA, PO Box 61, International Falls, MN 56648, 218/283-2240

491

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS D-130 August 2001

Voyageurs

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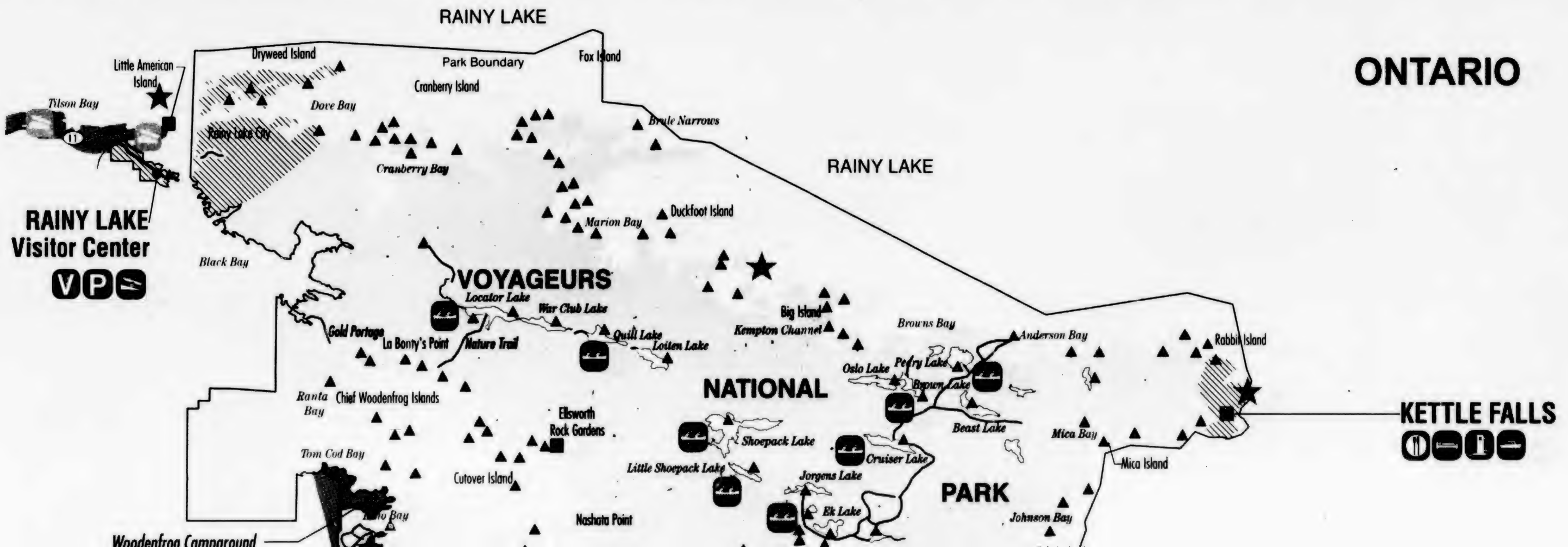
# Voyageurs National Park General Management / Visitor Use and Facilities Plan

National Park Service
Voyageurs National Park
International Falls, MN 56649



- ▨ **Park Land** (Non-Proposed Wilderness)
- ☐ **Park Land** (Proposed Wilderness)
- ☐ **Integrated Use Area** (water) (Non-Proposed Wilderness)
- ☐ **Nonmotorized Use Area** (water) (Proposed Wilderness)
- ■ **Communities**
- V **Visitor Center**
- R **Ranger Station**
- **NPS Boat Launch**
- **Boat Launch** (outside the park)
- **Concession Boat Rental**
- **NPS Boats on Interior Lakes**

B

# EXISTING CONDITIONS (summer)

Prepared for:
National Park Service
Denver Service Center
Denver, CO 80225
172/20043a/DSC/7 2001

Prepared By:
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Scale in Miles

park, but are not shown on this map.

Ⓑ

## EXISTING CONDITIONS (summer)

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International Falls, MN 56649

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Use and occupancy leases and private land exist in the park, but are not shown on this map.

## C

# EXISTING CONDITIONS (winter)

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D

**PRESENT COURSE OF ACTION / POTENTIAL DEVELOPED SITES** (summer)

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## PRESENT COURSE OF ACTION / POTENTIAL DEVELOPED SITES (summer)

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E

## ALTERNATIVE 1 Present Course of Action (summer)

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## F MODIFIED PROPOSED ACTION (summer)

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G **ALTERNATIVE 2 Resource Protection, Partnerships, Balanced Uses** (summer)

Prepared for:
National Park Service
Denver Service Center
Denver, CO 80225
172/20048a/DSC/7.2001

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# Voyageurs National Park General Management / Visitor Use and Facilities Plan

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H

## ALTERNATIVE 3 Visitor Experience and Opportunities (summer)

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**Voyageurs National Park** General Management / Visitor Use and Facilities Plan

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## ① MODIFIED PROPOSED ACTION, ALTERNATIVES 1,2,3 (winter)

Prepared for
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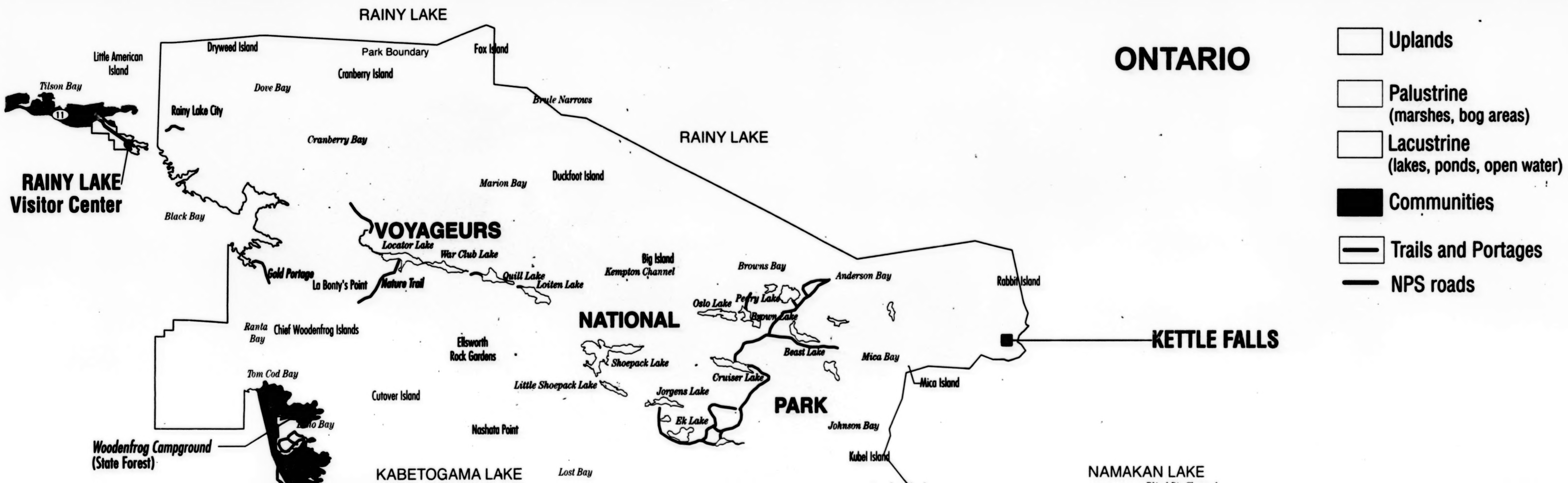
Voyageurs National Park
International Falls, MN 56649



Temporary closures are not shown on the map since they are subject to change over time. These closures are determined necessary due to public safety, wildlife management or park management objectives.
Use and occupancy leases and private land exist in the park, but are not shown on this map.

J

## WETLANDS INVENTORY

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